



SPLIT-TYPE, HEAT PUMP AIR CONDITIONERS

#### Revision:

- MXZ-18NV-**E1** and MXZ-18NV-**E2** have been added.
- Page layout has been changed.
- Performance curves has been modified.
- The graph of the outdoor low pressure in the HEAT operation of the PERFORMANCE CURVE of MXZ-32NV was deleted.
- Please void OB185 REVISED EDITION A and B.

**No. OB185**  
REVISED EDITION C

# SERVICE MANUAL

## Inverter-controlled multi system Models

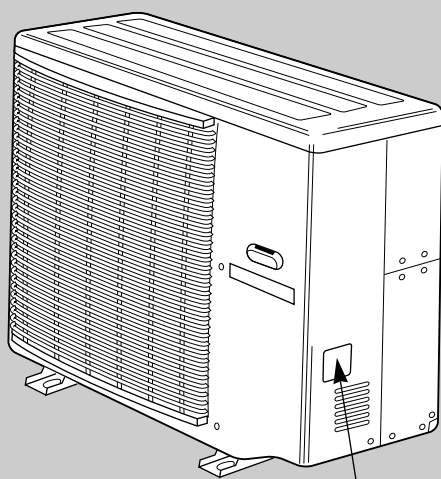
**MXZ-18NV** - **E1**

**MXZ-32NV** - **E1**

**MXZ-18NV** - **E2**

**MXZ-32NV** - **E2**

MXZ-32NV



Model indication

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This manual describes technical data of outdoor unit.

For indoor unit refer to the service manuals No.OB207 and OB196 REVISED EDITION A of corresponding models.

# 1

## TECHNICAL CHANGES

MXZ-18LV- [E1] →MXZ-18NV- [E1]

1. Inverter assembly has changed.
2. Gas pipe thermistors were added.
3. H.P.S. has changed.

MXZ-18NV- [E1] →MXZ-18NV- [E2]

1. MSH-07NV- [E2] and MSH-12NV- [E2] has been added to the combination of the connectable indoor units.
2. Outdoor unit electronic control P.C. board has changed.
3. The outdoor fan speed control has changed.(HEAT mode single operation : Lo → Hi)

MXZ-32AV- [E2] →MXZ-32NV- [E1]

1. The desital display self-diagnosis function has adopted.
2. The desorption method of LEV has changed the screw method to the one touch method.
3. The position of the electronical parts has changed.
4. The chargeless system has adopted.
5. The scroll compressor has adopted.
6. The micro control P.C.board has simplified.
7. The fan speed level has become 3 levels (Hi / Me / Lo).
8. The low pressure switch has adopted .
9. The dition of connector deviation has become easily.

MXZ-32NV- [E1] →MXZ-32NV- [E2]

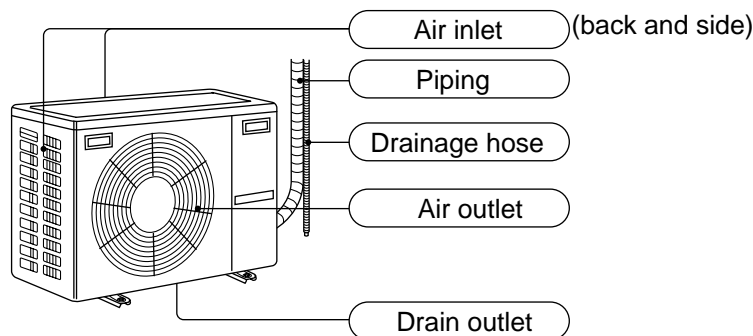
1. MCFH-13NV- [E2] and MCFH-18NV- [E2] has been added to the combination of the connectable indoor units.

# 2

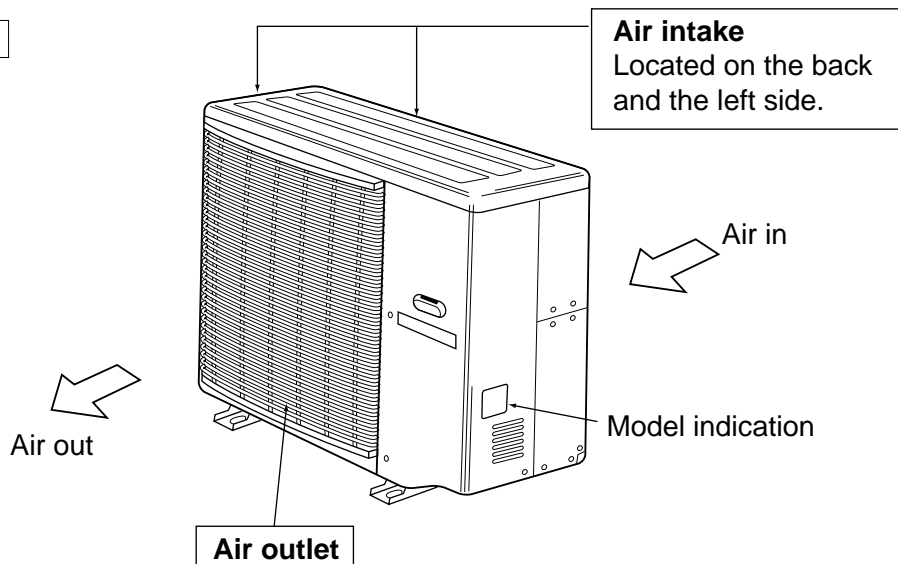
## PART NAMES AND FUNCTION

### Outdoor unit

MXZ-18NV



MXZ-32NV



## MXZ-18NV

	OUTDOOR UNIT	
	MXZ-18NV- <u>E1</u>	MXZ-18NV- <u>E2</u>
	09+09	09+09
	-	07+12

## MXZ-32NV

	OUTDOOR UNIT	
	MXZ-32NV- <u>E1</u>	MXZ-32NV- <u>E2</u>
Combination of the connectable indoor units	07+07+07	07+07+07
	07+07+09	07+07+09
	07+07+12	07+07+(12 or 13)
	07+07+18	07+07+18
	07+09+09	07+09+09
	07+09+12	07+09+(12 or 13)
	07+09+18	07+09+18
	07+12+12	07+(12 or 13)+(12 or 13)
	07+12+18	07+(12 or 13)+18
	07+18+18	07+18+18
	09+09+09	09+09+09
	09+09+12	09+09+(12 or 13)
	09+09+18	09+09+18
	09+12+12	09+(12 or 13)+(12 or 13)
	09+12+18	09+(12 or 13)+18
	09+18+18	09+18+18
	12+12+12	(12 or 13)+(12 or 13)+(12 or 13)
	12+12+18	(12 or 13)+(12 or 13)+18
	07+07+07+07	07+07+07+07
	07+07+07+09	07+07+07+09
	07+07+07+12	07+07+07+(12 or 13)
	07+07+07+18	07+07+07+18
	07+07+09+09	07+07+09+09
	07+07+09+12	07+07+09+(12 or 13)
	07+07+09+18	07+07+09+18
	07+07+12+12	07+07+(12 or 13)+(12 or 13)
	07+07+12+18	07+07+(12 or 13)+18
	07+09+09+09	07+09+09+09
	07+09+09+12	07+09+09+(12 or 13)
	07+09+09+18	07+09+09+18
	07+09+12+12	07+09+(12 or 13)+(12 or 13)
	09+09+09+09	09+09+09+09
	09+09+09+12	09+09+09+(12 or 13)
	09+09+09+18	09+09+09+18
	09+09+12+12	09+09+(12 or 13)+(12 or 13)

※There is no combination other than this table.

## MXZ-18NV

**NOTE:**Electrical data is for outdoor unit only.

Indoor units combination	Cooling capacity (kW)			Outdoor unit power consumption (kW)	Current (A)		Power factor (%)
	Unit A	Unit B	Total		220V	240V	
07	2.3	-	2.3 (1.6 - 2.8)	1.02 (0.855 - 1.33)	5.20	4.72	89 - 90
09	2.5	-	2.5 (1.7 - 3.0)	1.05 (0.855 - 1.36)	5.36	4.86	89 - 90
12	3.4	-	3.4 (1.8 - 3.8)	1.45 (0.855 - 1.63)	7.40	6.71	89 - 90
07+12	2.0	2.5	4.5 (2.0 - 4.5)	2.00 (0.91- 2.00)	10.21	9.26	89 - 90
09+09	2.25	2.25	4.5 (1.9 - 4.5)	2.00 (0.91 - 2.00)	10.21	9.26	89 - 90

Indoor units combination	Heating capacity (kW)			Outdoor unit power consumption (kW)	Current (A)		Power factor (%)
	Unit A	Unit B	Total		220V	240V	
07	3.3	-	3.3 (2.0 - 4.0)	1.45 (0.69 - 1.60)	7.40	6.71	89 - 90
09	3.6	-	3.6 (2.0 - 4.5)	1.47 (0.69 - 1.62)	7.50	6.80	89 - 90
12	4.0	-	4.0 (2.2 - 4.7)	1.63 (0.69 - 1.69)	8.32	7.54	89 - 90
07+12	2.7	3.1	5.8 (2.1 - 5.8)	1.785 (0.69 - 1.785)	9.02	8.26	90 - 90
09+09	2.9	2.9	5.8 (2.0 - 5.8)	1.785 (0.69 - 1.785)	9.02	8.26	90 - 90

**MXZ-32NV****NOTE:** Electrical data is for outdoor unit only.

Indoor units combination	Heating capacity (kw)					Outdoor unit power consumption (kw)	Current (A)		Power factor (%)
	Unit A	Unit B	Unit C	Unit D	Total		220V	240V	
07	2.2	-	-	-	2.2 (1.8-2.7)	1.00 (0.96-1.14)	5.05	4.63	90
09	2.8	-	-	-	2.8 (1.8-3.2)	1.77 (0.96-1.36)	5.91	5.42	90
12(13)	4.0	-	-	-	4.0 (2.2-4.5)	1.42 (1.00-1.63)	7.17	6.57	90
18	5.0	-	-	-	5.0 (2.2-5.4)	1.84 (1.00-1.99)	9.29	8.52	90
07+07	2.2	2.2	-	-	4.4 (3.0-5.4)	1.63 (1.30-2.03)	8.23	7.55	90
07+09	2.2	2.8	-	-	5.0 (3.0-6.0)	1.88 (1.30-2.23)	9.49	8.70	90
07+12(13)	2.2	4.0	-	-	6.2 (3.0-7.2)	2.38 (1.30-2.98)	12.02	11.09	90
07+18	2.2	5.0	-	-	7.2 (3.0-7.6)	2.74 (1.30-2.98)	13.84	12.69	90
09+09	2.8	2.8	-	-	5.6 (3.0-6.4)	2.13 (1.30-2.43)	10.76	9.86	90
09+12(13)	2.8	4.0	-	-	6.8 (3.0-7.6)	2.63 (1.30-2.88)	12.18	12.18	90
09+18	2.8	5.0	-	-	7.8 (3.0-8.6)	3.29 (1.30-3.60)	16.62	15.23	90
12(13)+12(13)	4.0	4.0	-	-	8.0 (3.0-8.8)	3.38 (1.30-3.60)	17.07	15.65	90
12(13)+18	3.5	4.5	-	-	8.0 (3.0-8.8)	3.38 (1.30-3.60)	17.07	15.65	90
18+18	4.0	4.0	-	-	8.0 (3.0-8.8)	3.38 (1.30-3.60)	17.07	15.65	90
07+07+07	2.2	2.2	2.2	-	6.6 (3.7-8.1)	3.23 (1.30-3.96)	17.07	15.65	90
07+07+09	2.2	2.2	2.8	-	7.2 (3.7-8.5)	3.23 (1.30-3.96)	16.31	14.95	90
07+07+12(13)	2.1	2.1	3.8	-	8.0 (3.7-9.0)	3.23 (1.30-3.96)	16.31	14.95	90
07+07+18	1.9	1.9	4.2	-	8.0 (3.7-9.0)	3.23 (1.30-3.96)	16.31	14.95	90
07+09+09	2.2	2.8	2.8	-	7.8 (3.7-8.8)	3.23 (1.30-3.96)	16.31	14.95	90
07+09+12(13)	1.9	2.5	3.6	-	8.0 (3.7-9.0)	3.23 (1.30-3.96)	16.31	14.95	90
07+09+18	1.7	2.3	4.0	-	8.0 (3.7-9.0)	3.23 (1.30-3.96)	16.31	14.95	90
07+12(13)+12(13)	1.8	3.1	3.1	-	8.0 (3.7-9.0)	3.23 (1.30-3.96)	16.31	14.95	90
07+12(13)+18	1.6	2.8	3.6	-	8.0 (3.7-9.0)	3.23 (1.30-3.96)	16.31	14.95	90
07+18+18	1.5	3.25	3.25	-	8.0 (3.7-9.0)	3.23 (1.30-3.96)	16.31	14.95	90

**NOTE:** Electrical data is for outdoor unit only.

Indoor units combination	Heating capacity (kw)					Outdoor unit power consumption (kw)	Current (A)		Power factor (%)
	Unit A	Unit B	Unit C	Unit D	Total		220V	240V	
09+09+09	2.67	2.67	2.67	-	8.0 (3.7-9.0)	3.23 (1.30-3.96)	16.31	14.95	90
09+09+12(13)	2.3	2.3	3.4	-	8.0 (3.7-9.0)	3.23 (1.30-3.96)	16.31	14.95	90
09+09+18	2.1	2.1	3.8	-	8.0 (3.7-9.0)	3.23 (1.30-3.96)	16.31	14.95	90
09+12(13)+12(13)	2.0	3.0	3.0	-	8.0 (3.7-9.0)	3.23 (1.30-3.96)	16.31	14.95	90
09+12(13)+18	1.9	2.7	3.4	-	8.0 (3.7-9.0)	3.23 (1.30-3.96)	16.31	14.95	90
09+18+18	1.8	3.1	3.1	-	8.0 (3.7-9.0)	3.23 (1.30-3.96)	16.31	14.95	90
12(13)+12(13)+12(13)	2.67	2.67	2.67	-	8.0 (3.7-9.0)	3.23 (1.30-3.96)	16.31	14.95	90
12(13)+12(13)+18	2.45	2.45	3.1	-	8.0 (3.7-9.0)	3.23 (1.30-3.96)	16.31	14.95	90
07+07+07+07	2.0	2.0	2.0	2.0	8.0 (3.7-9.0)	3.23 (1.30-3.96)	16.31	14.95	90
07+07+07+09	1.87	1.87	1.87	2.4	8.0 (3.7-9.0)	3.23 (1.30-3.96)	16.31	14.95	90
07+07+07+12(13)	1.7	1.7	1.7	2.9	8.0 (3.7-9.0)	3.23 (1.30-3.96)	16.31	14.95	90
07+07+07+18	1.5	1.5	1.5	3.5	8.0 (3.7-9.0)	3.23 (1.30-3.96)	16.31	14.95	90
07+07+09+09	1.8	1.8	2.2	2.2	8.0 (3.7-9.0)	3.23 (1.30-3.96)	16.31	14.95	90
07+07+09+12(13)	1.6	1.6	2.0	2.8	8.0 (3.7-9.0)	3.23 (1.30-3.96)	16.31	14.95	90
07+07+09+18	1.5	1.5	1.8	3.2	8.0 (3.7-9.0)	3.23 (1.30-3.96)	16.31	14.95	90
07+07+12(13)+12(13)	1.4	1.4	2.6	2.6	8.0 (3.7-9.0)	3.23 (1.30-3.96)	16.31	14.95	90
07+07+12(13)+18	1.3	1.3	2.4	3.0	8.0 (3.7-9.0)	3.23 (1.30-3.96)	16.31	14.95	90
07+09+09+09	1.7	2.1	2.1	2.1	8.0 (3.7-9.0)	3.23 (1.30-3.96)	16.31	14.95	90
07+09+09+12(13)	1.5	1.9	1.9	2.7	8.0 (3.7-9.0)	3.23 (1.30-3.96)	16.31	14.95	90
07+09+09+18	1.4	1.75	1.75	3.1	8.0 (3.7-9.0)	3.23 (1.30-3.96)	16.31	14.95	90
07+09+12(13)+12(13)	1.35	1.75	2.45	2.45	8.0 (3.7-9.0)	3.23 (1.30-3.96)	16.31	14.95	90
09+09+09+09	2.0	2.0	2.0	2.0	8.0 (3.7-9.0)	3.23 (1.30-3.96)	16.31	14.95	90
09+09+09+12(13)	1.8	1.8	1.8	2.6	8.0 (3.7-9.0)	3.23 (1.30-3.96)	16.31	14.95	90
09+09+09+18	1.67	1.67	1.67	3.0	8.0 (3.7-9.0)	3.23 (1.30-3.96)	16.31	14.95	90
09+09+12(13)+12(13)	1.65	1.65	2.35	2.35	8.0 (3.7-9.0)	3.23 (1.30-3.96)	16.31	14.95	90

**NOTE:** Electrical data is for outdoor unit only.

Indoor units combination	Heating capacity (kw)					Outdoor unit power consumption (kw)	Current (A)		Power factor (%)
	Unit A	Unit B	Unit C	Unit D	Total		220V	240V	
07	3.4	-	-	-	3.4 (2.1-3.6)	1.20 (0.91-1.28)	6.06	5.55	90
09	4.0	-	-	-	4.0 (2.1-4.2)	1.43 (0.91-1.51)	7.22	6.62	90
12(13)	6.0	-	-	-	6.0 (2.2-6.3)	1.79 (0.94-1.88)	9.04	8.29	90
18	7.1	-	-	-	7.1 (2.2-7.5)	2.10 (0.94-2.21)	10.61	9.72	90
07+07	3.4	3.4	-	-	6.8 (4.1-7.2)	1.98 (1.13-2.18)	10.00	9.17	90
07+09	3.4	4.0	-	-	7.4 (4.1-7.8)	2.23 (1.13-2.33)	11.26	10.32	90
07+12(13)	3.35	5.95	-	-	9.3 (4.1-9.7)	2.82 (1.13-2.96)	14.24	13.05	90
07+18	2.85	6.45	-	-	9.3 (4.1-9.7)	2.82 (1.13-2.96)	14.24	13.05	90
09+09	4.0	4.0	-	-	8.0 (4.1-8.4)	2.38 (1.13-2.54)	12.02	11.01	90
09+12(13)	3.7	5.6	-	-	9.3 (4.1-9.7)	2.82 (1.13-2.96)	14.24	13.05	90
09+18	3.35	5.95	-	-	9.3 (4.1-9.7)	2.82 (1.13-2.96)	14.24	13.05	90
12(13)+12(13)	4.65	4.65	-	-	9.3 (4.1-9.7)	2.82 (1.13-2.96)	14.24	13.05	90
12(13)+18	4.3	5.0	-	-	9.3 (4.1-9.7)	2.82 (1.13-2.96)	14.24	13.05	90
18+18	4.65	4.65	-	-	9.3 (4.1-9.7)	2.82 (1.13-2.96)	14.24	13.05	90
07+07+07	3.1	3.1	3.1	-	9.3 (5.2-10.6)	2.78 (1.19-2.96)	14.04	12.87	90
07+07+09	2.95	2.95	3.4	-	9.3 (5.2-10.6)	2.78 (1.19-2.96)	14.04	12.87	90
07+07+12(13)	2.5	2.5	4.3	-	9.3 (5.2-10.6)	2.78 (1.19-3.96)	14.04	12.87	90
07+07+18	2.3	2.3	4.7	-	9.3 (5.2-10.6)	2.78 (1.19-2.96)	14.04	12.87	90
07+09+09	2.8	3.25	3.25	-	9.3 (5.2-10.6)	2.78 (1.19-2.96)	14.04	12.87	90
07+09+12(13)	2.4	2.8	4.1	-	9.3 (5.2-10.6)	2.78 (1.19-2.96)	14.04	12.87	90
07+09+18	2.2	2.6	4.5	-	9.3 (5.2-10.6)	2.78 (1.19-3.96)	14.04	12.87	90
07+12(13)+12(13)	2.0	3.65	3.65	-	9.3 (5.2-10.6)	2.78 (1.19-2.96)	14.04	12.87	90
07+12(13)+18	1.9	3.4	4.0	-	9.3 (5.2-10.6)	2.78 (1.19-2.96)	14.04	12.87	90
07+18+18	1.9	3.75	3.75	-	9.3 (5.2-10.6)	2.78 (1.19-2.96)	14.04	12.87	90

**NOTE:** Electrical data is for outdoor unit only.

Indoor units combination	Heating capacity (kw)					Outdoor unit power consumption (kw)	Current (A)		Power factor (%)
	Unit A	Unit B	Unit C	Unit D	Total		220V	240V	
09+09+09	3.1	3.1	3.1	-	9.3 (5.2-10.6)	2.78 (1.19-2.96)	14.04	12.87	90
09+09+12(13)	2.65	2.65	4.0	-	9.3 (5.2-10.6)	2.78 (1.19-2.96)	14.04	12.87	90
09+09+18	2.45	2.45	4.4	-	9.3 (5.2-10.6)	2.78 (1.19-2.96)	14.04	12.87	90
09+12(13)+12(13)	2.3	3.5	3.5	-	9.3 (5.2-10.6)	2.78 (1.19-2.96)	14.04	12.87	90
09+12(13)+18	2.2	3.3	3.8	-	9.3 (5.2-10.6)	2.78 (1.19-2.96)	14.04	12.87	90
09+18+18	2.0	3.65	3.65	-	9.3 (5.2-10.6)	2.78 (1.19-2.96)	14.04	12.87	90
12(13)+12(13)+12(13)	3.1	3.1	3.1	-	9.3 (5.2-10.6)	2.78 (1.19-2.96)	14.04	12.87	90
12(13)+12(13)+18	2.86	2.86	3.58	-	9.3 (5.2-10.6)	2.78 (1.19-2.96)	14.04	12.87	90
07+07+07+07	2.32	2.32	2.32	2.32	9.3 (5.2-10.6)	2.78 (1.19-2.96)	14.04	12.87	90
07+07+07+09	2.2	2.2	2.2	2.7	9.3 (5.2-10.6)	2.78 (1.19-2.96)	14.04	12.87	90
07+07+07+12(13)	2.0	2.0	2.0	3.3	9.3 (5.2-10.6)	2.78 (1.19-2.96)	14.04	12.87	90
07+07+07+18	1.9	1.9	1.9	3.6	9.3 (5.2-10.6)	2.78 (1.19-2.96)	14.04	12.87	90
07+07+09+09	2.15	2.15	2.5	2.5	9.3 (5.2-10.6)	2.78 (1.19-2.96)	14.04	12.87	90
07+07+09+12(13)	1.9	1.9	2.2	3.3	9.3 (5.2-10.6)	2.78 (1.19-2.96)	14.04	12.87	90
07+07+09+18	1.75	1.75	2.1	3.7	9.3 (5.2-10.6)	2.78 (1.19-2.96)	14.04	12.87	90
07+07+12(13)+12(13)	1.7	1.7	2.95	2.95	9.3 (5.2-10.6)	2.78 (1.19-2.96)	14.04	12.87	90
07+07+12(13)+18	1.6	1.6	2.8	3.3	9.3 (5.2-10.6)	2.78 (1.19-2.96)	14.04	12.87	90
07+09+09+09	2.1	2.4	2.4	2.4	9.3 (5.2-10.6)	2.78 (1.19-2.96)	14.04	12.87	90
07+09+09+12(13)	1.8	2.15	2.15	3.2	9.3 (5.2-10.6)	2.78 (1.19-2.96)	14.04	12.87	90
07+09+09+18	1.7	2.0	2.0	3.6	9.3 (5.2-10.6)	2.78 (1.19-2.96)	14.04	12.87	90
07+09+12(13)+12(13)	1.6	1.9	2.9	2.9	9.3 (5.2-10.6)	2.78 (1.19-2.96)	14.04	12.87	90
09+09+09+09	2.32	2.32	2.32	2.32	9.3 (5.2-10.6)	2.78 (1.19-2.96)	14.04	12.87	90
09+09+09+12(13)	2.05	2.05	2.05	3.15	9.3 (5.2-10.6)	2.78 (1.19-2.96)	14.04	12.87	90
09+09+09+18	1.95	1.95	1.95	3.45	9.3 (5.2-10.6)	2.78 (1.19-2.96)	14.04	12.87	90
09+09+12(13)+12(13)	1.85	1.85	2.8	2.8	9.3 (5.2-10.6)	2.78 (1.19-2.96)	14.04	12.87	90



Model			MXZ-18NV- <u>E1</u> MXZ-18NV- <u>E2</u>	
System	Indoor units number		2	
	Piping total length	m	Max. 30	
	Connecting pipe length	m	Max. 20	
	Height difference (indoor ~ outdoor)	m	Max. 7	
	Height difference (indoor ~ indoor)	m	Max. 7	
Capacity	Cooling	Capacity	4.5 (1.7 ~ 4.5)	
		Sound level	45	
	Heating	Capacity	5.8 (2.0 ~ 5.8)	
		Booster heater	-	
		Sound level	46	
Electrical data * 1	Power supply		Single phase, 220-240V, 50Hz	
	Mode		Cooling	Heating
	Power consumption		2,000 (855~2000)	1,785 (690~1785)
	Running current		10.21(5.28 - 10.21) - 9.26(4.83 - 9.26)	9.02(6.38 - 9.02) - 8.26(5.83 - 8.26)
	Power factor		89 - 90	90 - 90
	Crankcase heater		-	
	Starting current		10.21	
	Compressor motor current		9.74(4.87 - 9.74) - 8.86(4.43 - 8.86)	8.62(5.98 - 8.62) - 7.86(5.43 - 7.86)
	Fan motor current		0.4	
	External finish		Munsell 5Y 7/1	
Outdoor unit	Dimensions	Height	650	
		Width	875	
		Depth	295 (+30)	
	Weight		56	
	Refrigerant filling capacity (R-22)		1.3	
	Refrigerating oil <Model>		570cc <MS-56>	
	In/Out connecting wire (Each room)		2-core, 1pc. $\phi$ 2.0mm	
	Refrigerant piping	Liquid pipe	$\phi$ 9.52 (2pcs)	
		Gas pipe	$\phi$ 6.35 (2pcs)	
		Connection method	Flared	
	Protective device	Compressor	* 2	
		Fan motor	Inner thermostat	
	Compressor	Model	RHV-207FEM (Rotary)	
		Output	1,100	
		Winding resistance (at 20 °C)	1.195(U-V, V-W, W-U)	
	Fan motor	Model	RA6V50 - □□	
		Output	50	
		Winding resistance (at 20 °C)	BLK-WHT 163, BLK-YLW 72, YLW-RED 36	
	Air flow amount change		2	
	Fan speed		630-670	
	Air flow		2,460 - 2,580	
	Power outlet		25	
	Thermistor	RT61 (at 25°C)	10.0k $\Omega$	
		RT62 (at 100°C)	13.4k $\Omega$	
		RT63 (at 70°C)	7.9k $\Omega$	
		RT64 (at 25°C)	10.0k $\Omega$	
		RT65 (at 25°C)	10.0k $\Omega$	
		RT66, 67 (at 25°C)	10.0k $\Omega$	

TEST CONDITIONS COOLING INDOOR DB27.0°C WB19.0°C  
 OUTDOOR DB35.0°C WB24.0°C  
 HEATING INDOOR DB20.0°C  
 OUTDOOR DB 7.0°C WB 6.0°C

\*2 Current detection  
 Discharge temperature detection  
 High-pressure switch

\*1 Electrical data is for only outdoor unit.

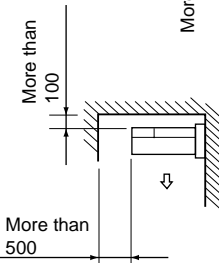
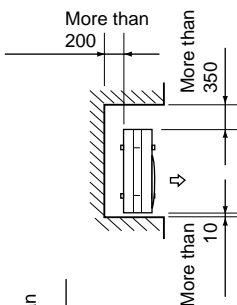
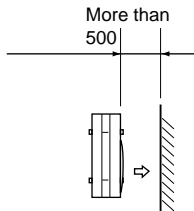
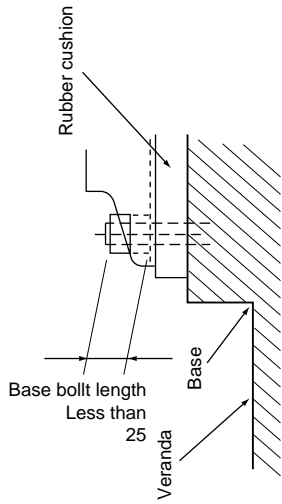
Model				MXZ-32NV- <u>E1</u> MXZ-32NV- <u>E2</u>	
System	Indoor units number			3-4	
	Piping total length		m	Max. 60	
	Connecting pipe length		m	Max. 25	
	Height difference (indoor ~ outdoor)		m	Max. 10	
	Height difference (indoor ~ indoor)		m	Max. 10	
Capacity	Cooling	Capacity	kW	8.0 (1.8 ~ 9.0)	
		Sound level	dB	45-47	
	Heating	Capacity	kW	9.3 (2.1 ~ 10.6)	
		Booster heater	W	-	
		Sound level	dB	46-48	
Electrical data *1	Power supply			Single phase, 220-240V, 50Hz	
	Mode			Cooling	Heating
	Power consumption		W	3,230 (960~3,960)	2,780 (910~2,960)
	Running current		A	16.31(4.85 - 20.00) - 14.95(4.44 - 18.33)	
	Power factor		%	90	
	Crankcase heater		W	25	
	Starting current		A	16.31 - 14.95	
	Compressor motor current		A	15.71(4.25 - 19.40) - 14.35(3.84 - 17.73)   13.44(4.00 - 14.35) - 12.27(3.62 - 13.10)	
Outdoor unit	Fan motor current			0.4	
	External finish			Munsell 5Y 8/1	
	Dimensions	Height	mm	900	
		Width	mm	900	
		Depth	mm	320 (+35)	
	Weight		kg	83.5	
	Refrigerant filling capacity (R-22)		kg	4.2	
	Refrigerating oil <Model>		cc	1070cc <MS-32>	
	In/Out connecting wire (Each room)			2-core, 1pc. $\phi$ 2.0mm	
	Refrigerant piping	Liquid pipe	mm	$\phi$ 12.7 (2pcs) $\phi$ 9.52 (2pcs)	
		Gas pipe	mm	$\phi$ 6.35 (4pcs)	
		Connection method		Flared	
	Protective device	Compressor		*2	
		Fan motor		Inner thermostat	
	Compressor	Model		CHV253FAA (Scroal)	
		Output	W	2,000	
		Winding resistance (at 20 °C)	$\Omega$	0.54(U-V, V-W, W-U)	
	Fan motor	Model		RA6V60-□□	
		Output	W	60	
		Winding resistance (at 20 °C)	$\Omega$	BLK-WHT 79.0, BLK-YLW 27.0, YLW-BLU 12.0 BLU-RED 84.0	
	Air flow amount change			3	
	Fan speed		rpm	630 - 680 / 525 - 570 / 460 - 500	
	Air flow		m³/h	3000 / 2400 / 2100	
	Power outlet		A	25	
	Thermistor	RT61 (at 100°C)		13.4k $\Omega$	
		RT62 (at 25°C)		10.0k $\Omega$	
		RT63 (at 50°C)		17.0k $\Omega$	
		RT64 (at 25°C)		10.0k $\Omega$	
		RT65 (at 25°C)		10.0k $\Omega$	
		RT70,66, 67,68,69 (at 25°C)		10.0k $\Omega$	

TEST CONDITIONS COOLING INDOOR DB27.0°C WB19.0°C  
 OUTDOOR DB35.0°C WB24.0°C  
 HEATING INDOOR DB20.0°C  
 OUTDOOR DB 7.0°C WB 6.0°C

\*1 Electrical data is for only outdoor unit.

\*2 Current detection  
 Discharge temperature detection  
 High-pressure switch  
 Crankcase heater  
 Low-pressure switch  
 Inner thermostat

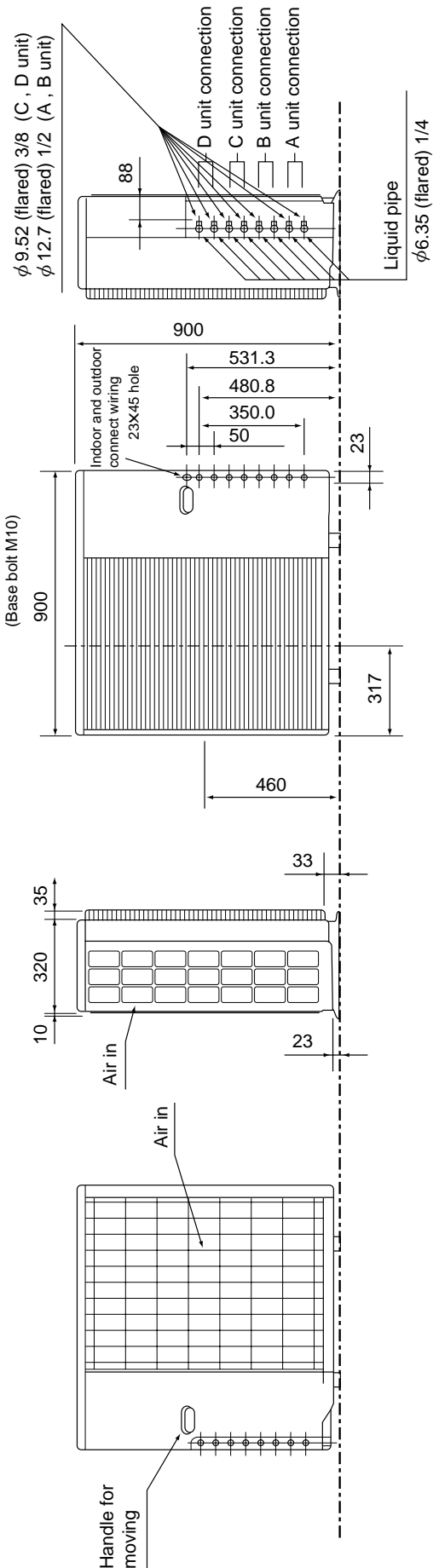
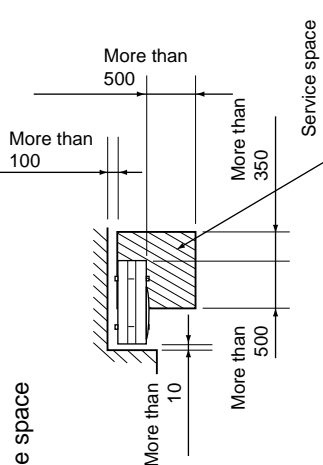
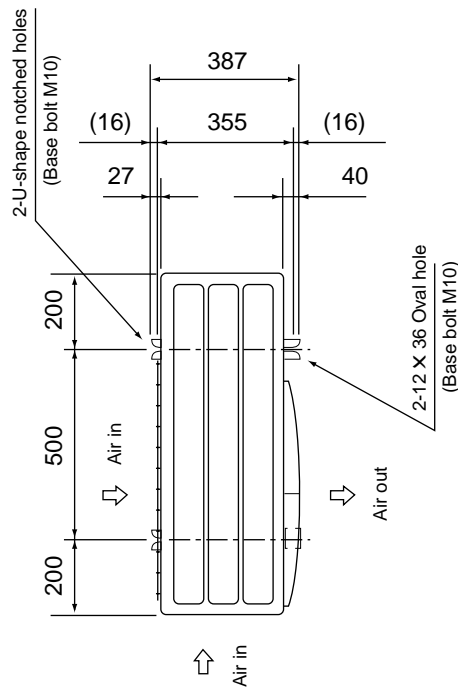




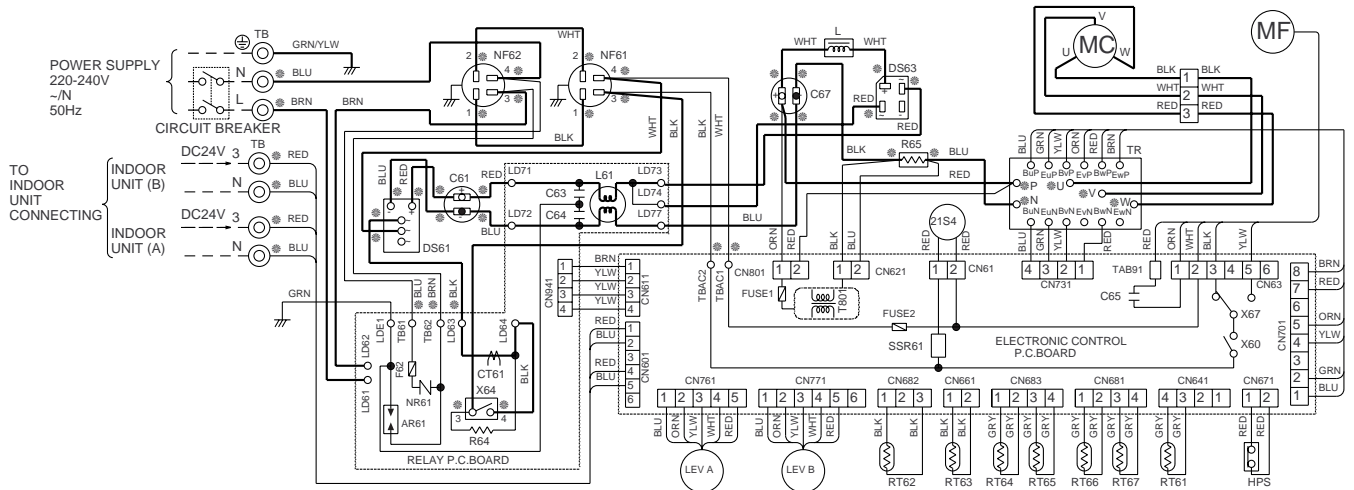
Note : Leave front, overhead and both clearance fully.

Note : Leave front and overhead clearance fully.

Note : Leave front and both sides clearance fully.



## MODELS MXZ-18NV- E1 MXZ-18NV- E2



SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
AR61	SURGE ABSORBER	L	REACTOR	RT66	SUCTION TEMPERATURE THERMISTOR
C61	POWER-FACTOR CAPACITOR	LEV A,B	EXPANSION VALVE	RT67	EVAPORATION TEMPERATURE THERMISTOR
C63	CERAMIC CAPACITOR	L61	CMC COIL	R64	CURRENT-LIMITING RESISTOR
C64	CERAMIC CAPACITOR	MC	COMPRESSOR	R65	CURRENT-DETECTING RESISTOR
C65	OUTDOOR FAN CAPACITOR	MF	OUTDOOR FAN MOTOR (INNER THERMOSTAT)	SSR61	SOLID STATE RELAY
C67	SMOOTHING CAPACITOR	NF61,62	NOISE FILTER	TB	TERMINAL BLOCK
CT61	CURRENT TRANSFORMER	NR61	VARISTOR	TR	POWER TRANSISTOR MODULE
DS61,63	DIODE MODULE	RT61	DEFROST TEMPERATURE THERMISTOR	T801	TRANSFORMER
FUSE1	FUSE(1A)	RT62	DISCHARGE TEMPERATURE THERMISTOR	X60,67	FAN MOTOR RELAY
FUSE2	FUSE(3.15A)	RT63	FIN TEMPERATURE THERMISTOR	X64	RELAY
F62	FUSE(3.15A)	RT64	GAS PIPE TEMPERATURE B. THERMISTOR	21S4	R.V. COIL
HPS	HIGH PRESSURE SWITCH	RT65	GAS PIPE TEMPERATURE A. THERMISTOR		

NOTE: 1. For the outdoor electric wiring refer to the outdoor unit electric wiring diagram for servicing.

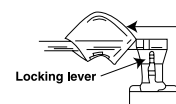
2. Use copper conductors only. (For field wiring)

3. Symbols below indicate.

⊙: Terminal block, □: Connector

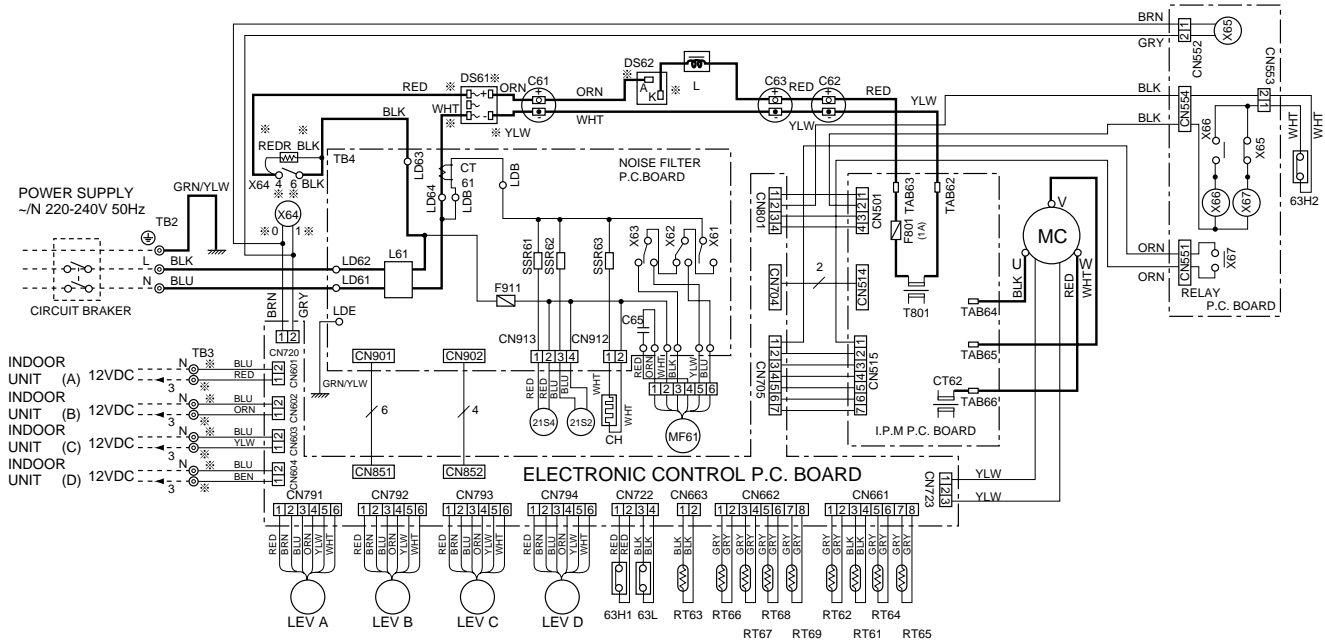
4. " \* " shows the terminals with a lock mechanism, so they cannot be removed when you pull the lead wire.

Be sure to pull the wire by pushing the locking lever (project part) of the terminal with a finger.



1. Slide the sleeve.
2. Pull the wire while pushing the locking lever.

# MODELS MXZ-32NV- [E1] MXZ-32NV- [E2]

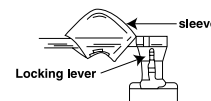


SYMBOL	NAME	SYMBOL	NAME
C61	POWER FACTOR CAPACITOR	RT65	SUCTION TEMPERATURE THERMISTOR
C62,63	SMOOTHING CAPACITOR	RT66,67	GUS PIPE TEMPERATURE THERMISTOR
C65	OUTDOOR FAN CAPACITOR	RT68,69	GUS PIPE TEMPERATURE THERMISTOR
CH	CRANKCASE HEATER	MC	COMPRESSOR
CT61,62	CURRENT TRANSFORMER	MF61	OUTDOOR FAN MOTOR (INNER FUSE)
DS61	DIODE MODULE	SSR61,62	SOLENOID COIL RELAY
DS62	DIODE STACK	SSR63	CRANKCASE HEATER RELAY
F801	FUSE (1A)	T801	TRANSFORMER
F911	FUSE (1A)	TB2,3,4	TERMINAL BLOCK
L	REACTOR	X61,62,63	FAN MOTOR RELAY
L61	COMMON MODE CHOKE COIL	X64,65	RELAY
LEV A~D	EXPANSION VALVE	X66,67	RELAY
R	RESISTOR	21S2	SOLENOID COIL
RT61	DISCHARGE TEMPERATURE THERMISTOR	21S4	R.V. COIL
RT62	DEFROST TEMPERATURE THERMISTOR	63H1	HIGH PRESSURE SWITCH
RT63	FIN TEMPERATURE THERMISTOR	63H2	HIGH PRESSURE SWITCH
RT64	EVAPORATION TEMPERATURE THERMISTOR	63L	LOW PRESSURE SWITCH

NOTE:1. " - - - " denotes the wiring at the site.

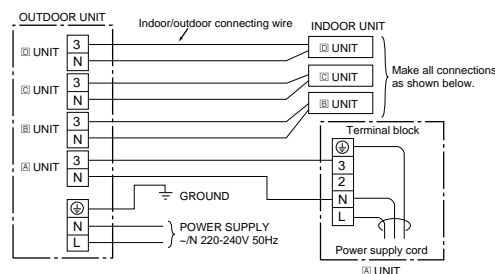
2. "⌘" show the terminals with a lock mechanism, so they cannot be removed when you pull the lead wire.

Be sure to pull the wire by pushing the locking lever(projected part) of the terminal with a finger.



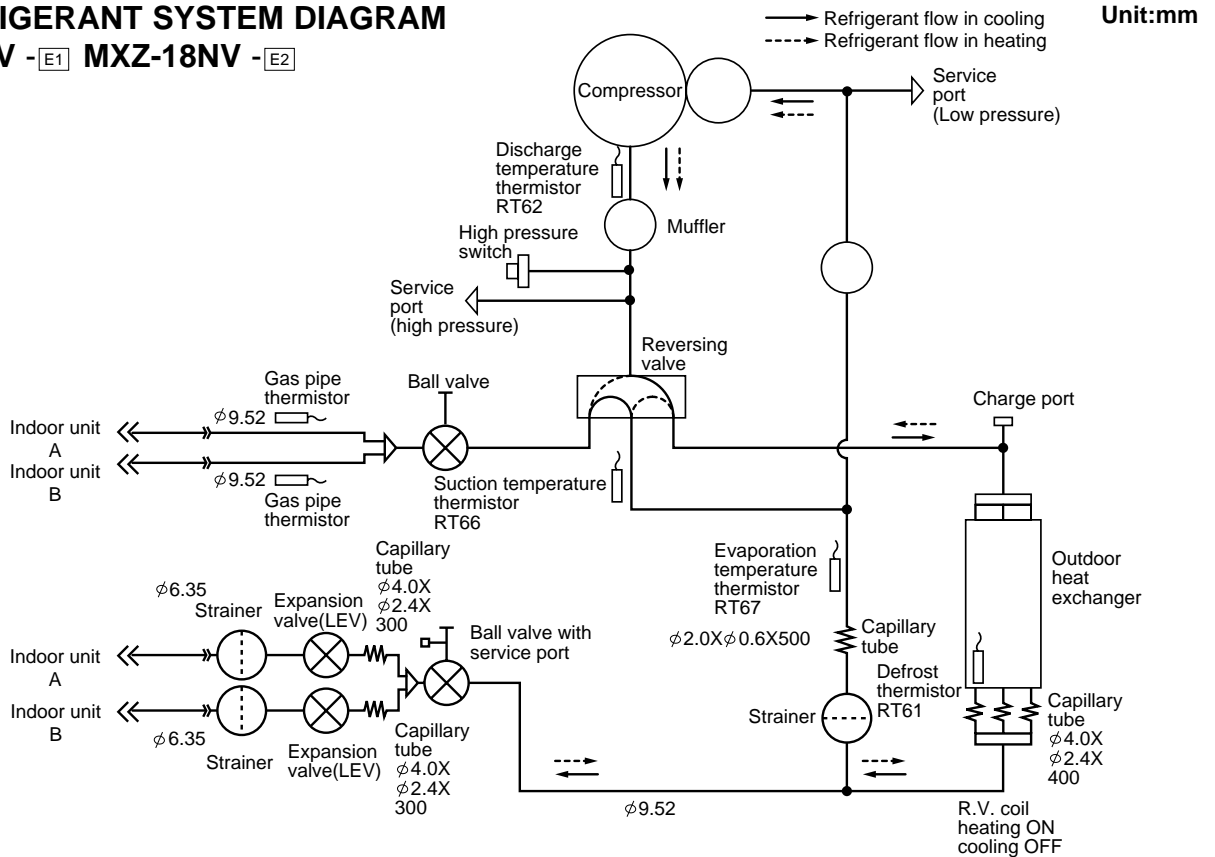
1. Slide the sleeve.
2. Pull the wire while pushing the locking lever.

INDOOR AND OUTDOOR ELECTRICAL WIRING CONNECTION FIGURE

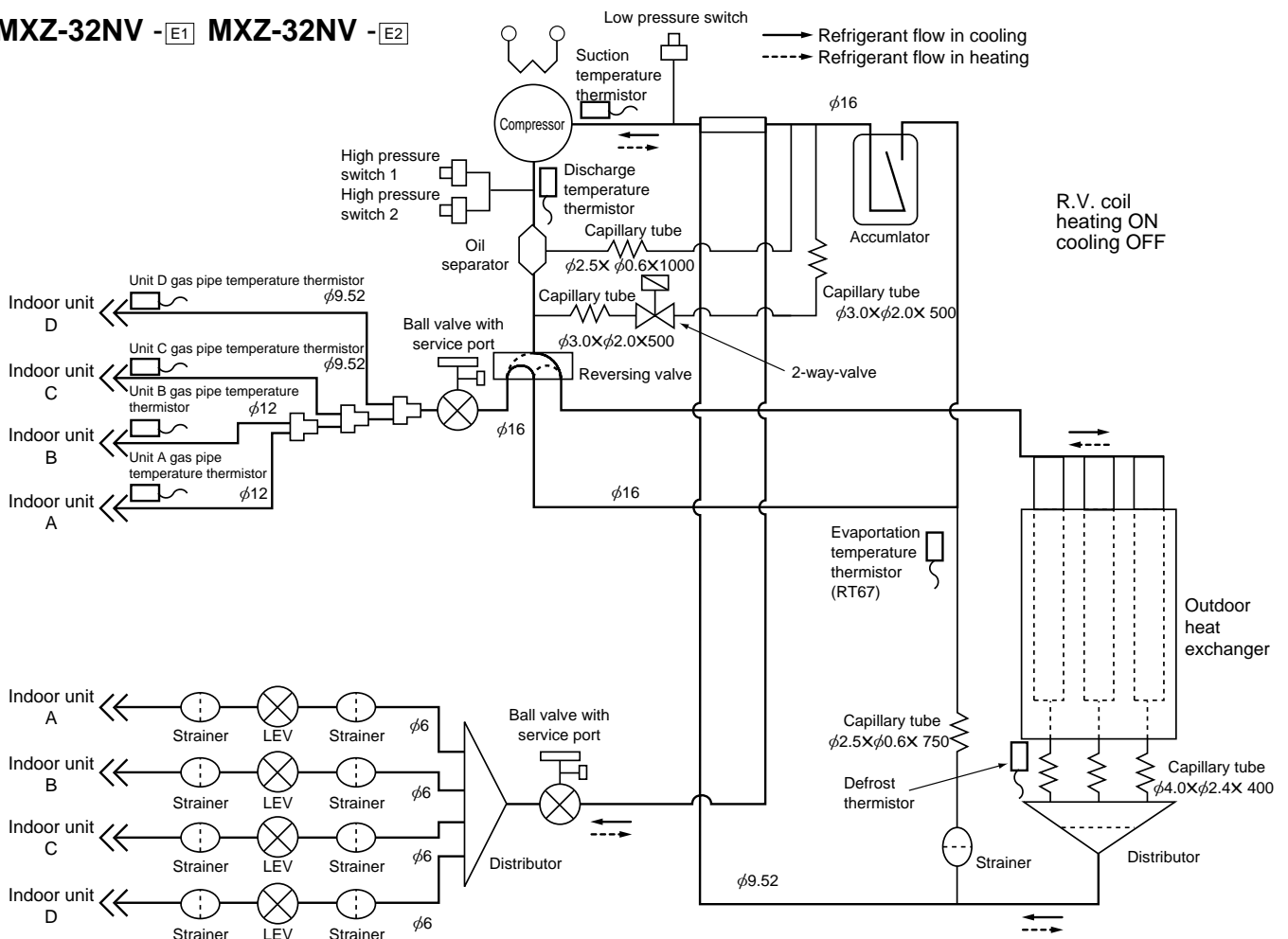


## 8.1 REFRIGERANT SYSTEM DIAGRAM

MXZ-18NV - [E1] MXZ-18NV - [E2]



MXZ-32NV - [E1] MXZ-32NV - [E2]

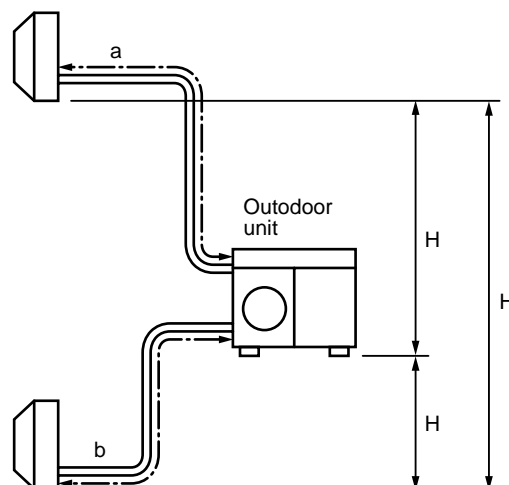


## 8.2 MAX REFRIGERANT PIPING LENGTH

**MXZ-18NV -<sup>[E1]</sup> MXZ-18NV -<sup>[E2]</sup>**

Piping length for each indoor unit (a,b)	20m
Total piping length (a+b)	30m
Height difference between units (H)	7m
Bending point for each unit	15
Total bending point	30

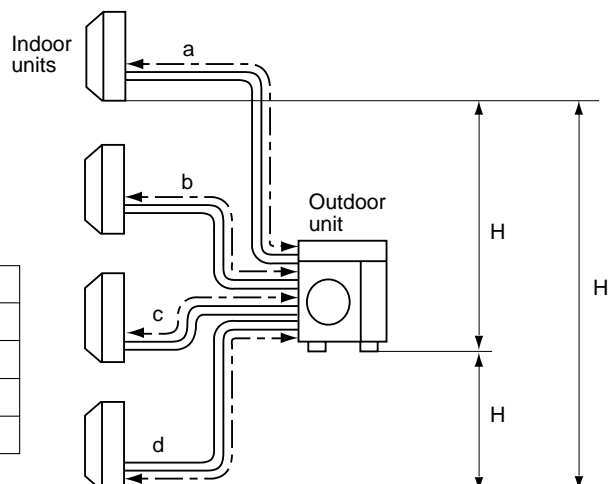
\* It does not matter which unit is higher



**MXZ-32NV -<sup>[E1]</sup> MXZ-32NV -<sup>[E2]</sup>**

Piping length each indoor unit (a, b, c, d)	25m
Total piping length (a+b+c+d)	60m
Height difference between units (H)	10m
Bending point for each unit	15
Total bending point	30

\*It does not matter which unit is higher.





## 8.3 PIPE SIZE SELECTION

### MXZ-18NV -<sup>[E1]</sup> MXZ-18NV -<sup>[E2]</sup>

- Refrigerant pipe diameter is different according to indoor unit to be connected. When using extension pipes, refer to the table below.
- When diameter of refrigerant pipe is different from that of outdoor unit union, use optional L-joint. For further information on L-joint, see page 62.

Unit : mm (inch)

	Indoor unit		Extention pipe diameter	
class	Pipe diameter			
07/09	Liquid	6.35(1/4)	Liquid	6.35(1/4)
	Gas	9.52(3/8)	Gas	9.52(3/8)
12	Liquid	6.35(1/4)	Liquid	6.35(1/4)
	Gas	12.7(1/2)	Gas	12.7(1/2)

Outdoor unit union diameter		
For		
Indoor unit A	Liquid	6.35(1/4)
	Gas	9.52(3/8)
Indoor unit B	Liquid	6.35(1/4)
	Gas	9.52(3/8)

### MXZ-32NV -<sup>[E1]</sup> MXZ-32NV -<sup>[E2]</sup>

- Refrigerant pipe diameter is different according to indoor unit to be connected. When using extension pipes, refer to the tables below.
- When diameter of refrigerant pipe is different from that of outdoor unit union, use optional Different-diameter pipe. For further information on Different-diameter pipe, see page 62.

Unit : mm (inch)

Indoor unit			Extention pipe diameter	
class	Pipe diameter			
07/09	Liquid	6.35(1/4)	Liquid	6.35(1/4)
	Gas	9.52(3/8)	Gas	9.52(3/8)
12(13)	Liquid	6.35(1/4)	Liquid	6.35(1/4)
	Gas	12.7(1/2)	Gas	12.7(1/2)
18	Liquid	6.35(1/4)	Liquid	6.35(1/4)
	Gas	15.88(5/8)	Gas	15.88(5/8)

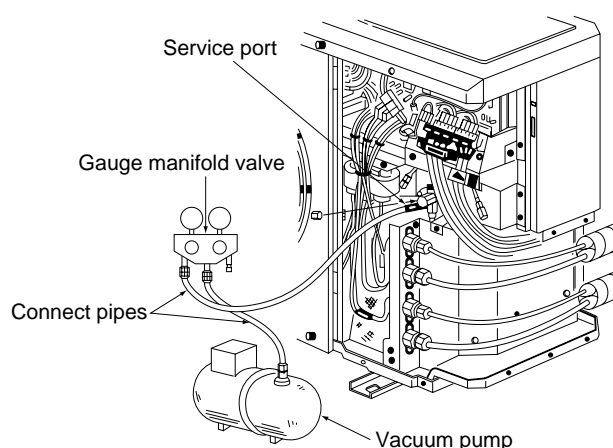
Outdoor unit union diameter		
For		
Indoor unit A	Liquid	6.35(1/4)
	Gas	12.7(1/2)
Indoor unit B	Liquid	6.35(1/4)
	Gas	12.7(1/2)
Indoor unit C	Liquid	6.35(1/4)
	Gas	9.52(3/8)
Indoor unit D	Liquid	6.35(1/4)
	Gas	9.52(3/8)

## 8.4 EVACUATION PROCEDURES

MXZ-18NV -<sup>[E1]</sup> MXZ-18NV -<sup>[E2]</sup>

**CAUTION** : If you run this unit with air in its refrigerant pipe before air purge, the compressor will decline in cooling capacity, which may result in trouble.

- ❶. Connect the refrigerant pipes (both the liquid and gas pipes) between the indoor and the outdoor units.
- ❷. Remove the service port cap of the stop valve on the side of the outdoor unit gas pipe.[ The stop valve will not work in its initial state fresh out of the factory (totally closed with cap on).]
- ❸. Connect the gauge manifold valve and the vacuum pump to the service port of the stop valve on the side of the outdoor unit gas pipe.



- ❹. Run the vacuum pump.
- ❺. Check the vacuum with the gauge manifold valve, then close the gauge manifold valve, and stop the vacuum pump.
- ❻. Leave it as is for one or two minutes. Make sure the pointer of the gauge manifold valve remains in the same position.
- ❼. Remove the cap from the stop valves of the outdoor unit, liquid pipe, and gas pipe. Pull the handle towards you with a finger. Turn it one fourth turn counterclockwise, to obtain the full-open position.
- ❽. Remove the cap manifold valve quickly from the service port of the stop valve.
- ❾. Tighten the cap to the service port to obtain the initial status.
- ❿. Thrust the handle of the stop valve into the unit, then retighten the cap.

**Leak test** ..... With a gas detector or soap water, check the flared nut connections for any refrigerant leak.

### In case of a refrigerant leak

- Retighten the flared nut connections.
- If the leak does not stop even after retightening, repair the leaking point, collect all from inside the unit through the service port, apply a vacuum to it, then charge a specified amount of gas with a gas cylinder.

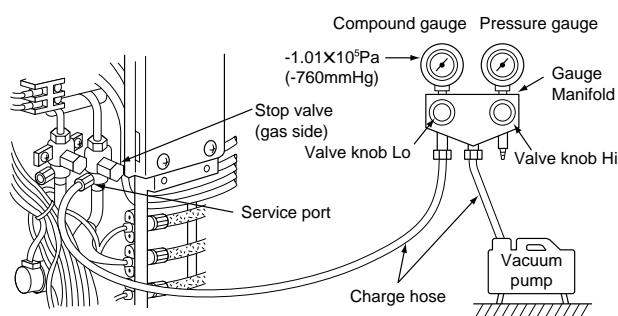
## MXZ-32NV -<sup>[E1]</sup> MXZ-32NV -<sup>[E2]</sup>

- For details about how to use manifold valves, see the instruction manual for manifold valves.
- The valve knob Hi below cannot operate during the following work if it is fully closed.

**Warning :** When installing or moving the unit, do not mix anything other than specified refrigerant (R-22) into the refrigerating cycle.

If air is mixed, it may cause the refrigerating cycle to get abnormally high temperature, causing a risk of burst.

- ❶. Make sure the pipes are connected securely.
- ❷. Connect the projected side (on which the setting pin is pressed) of the gauge manifold valve's charge hose to the stop valve's service port (gas pipe side).
- ❸. Make sure the stop valves of gas and liquid pipes are fully closed, and connect the charge hose to the vacuum pump.



- ❹. Fully open the manifold valve's valve knob Lo and operate the vacuum pump.  
Loosen the stop valve flare nut on the gas pipe side a little bit and make sure that air is entering.  
Then tighten the flare nut not to enter the air. After that, make sure that the charge hose is connected firmly to the service port.
- ❺. Purge air for more than 15 minutes, and make sure the compound gauge is reading  $-1.01 \times 10^5 \text{ Pa}$  (-760mmHg).
- ❻. After purging air, fully close the manifold valve's valve knob Lo and stop operating the vacuum pump.
- ❼. Leave the situation for about 1 to 2 minutes, make sure the needle of the compound gauge does not return, pull the stop valve's knob toward you, and fully open the stop valve by turning it a quarter turn counterclockwise.
- ❽. Quickly remove the gauge manifold valve's charge hose from the stop valve's service port.
- ❾. Tighten the service port cap 1/12 turn more from where the tightening torque is suddenly increased.  
(It is equivalent to a tightening torque of 13.7 to 17.7N-m (140 to 180kgf-cm).)
- ❿. Tighten the service port cap 1/12 turn more from where the tightening torque is suddenly increased.  
(It is equivalent to a tightening torque of 19.6 to 29.4N-m (200 to 300kgf-cm).)

**Leak test** ..... With a gas detector or soap water, check the flared nut connections for any refrigerant leak.

### In case of a refrigerant leak

- Retighten the flared nut connections.
- If the leak does not stop even after retightening, repair the leaking point, collect all from inside the unit through the service port, apply a vacuum to it, then charge a specified amount of gas with a gas cylinder.

The standard data contained in these specifications apply only to the operation of the air conditioner, that is one indoor unit with one outdoor unit, under normal conditions. Since operating conditions vary according to the areas where these units are installed. The following information has been provided to clarify the operating characteristics of the air conditioner under the conditions indicated by the performance curve.

## (1) GUARANTEED VOLTAGE

Rated voltage :  $\pm 10\%$  (198 ~ 264V 50Hz )

## (2) AIR FLOW

Air flow should be set at MAX.

## (3) MAIN READINGS

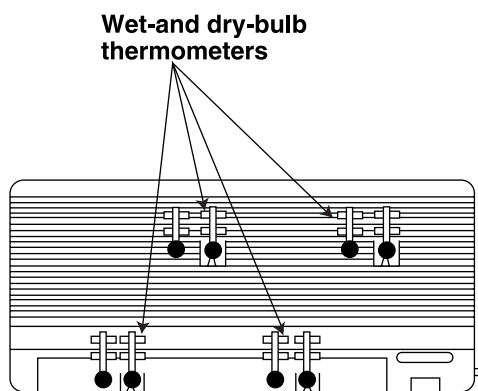
(1) Indoor intake air wet-bulb temperature :	°CWB	} Cooling
(2) Indoor discharge air wet-bulb temperature :	°CWB	
(3) Outdoor intake air dry-bulb temperature :	°CDB	
(4) Total input:	W	} Heating
(5) Indoor intake air dry-bulb temperature :	°CDB	
(6) Outdoor intake air wet-bulb temperature :	°CWB	
(7) Total input :	W	

Indoor air wet-bulb temperature difference on the left side of the chart on next page shows the difference between the indoor intake air wet-bulb temperature and the indoor discharge air wet-bulb temperature for your reference at service.

### How to measure the indoor air wet-bulb temperature difference

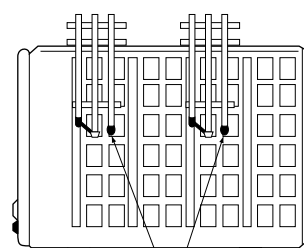
1. Attach at least 2 sets of wet-and dry-bulb thermometers to the indoor air intake as shown in the figure, and at least 2 sets of wet-and dry-bulb thermometers to the indoor air outlet. The thermometers must be attached to the position where air speed is high.
2. Attach at least 2 sets of wet-and dry-bulb thermometers to the outdoor air intake. Cover the thermometers to prevent direct rays of the sun.
3. Check if the air filter is cleaned.
4. Open windows and doors of room.
5. Press the EMERGENCY ON/OFF button to start the EMERGENCY operation.
6. When system stabilizes after more than 15 minutes, measure temperature and take an average temperature.
7. Ten minutes later, measure temperature again and check that the temperature does not change.

### INDOOR UNIT



FRONT VIEW

### OUTDOOR UNIT



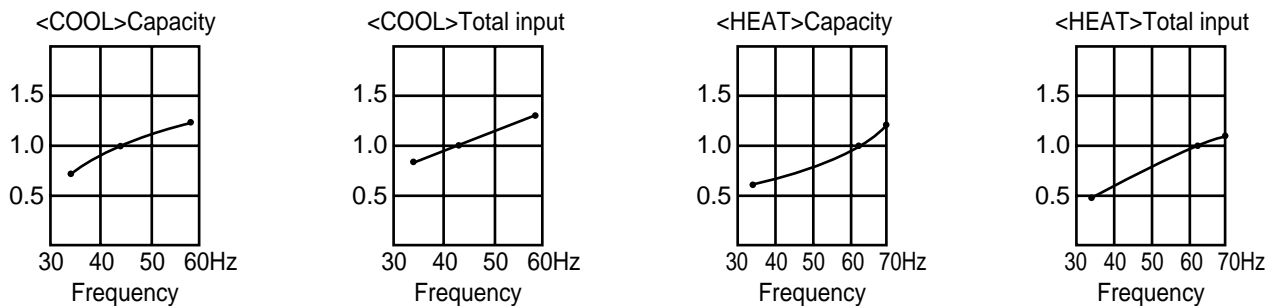
Wet-and dry-bulb thermometers  
BACK VIEW

## 9.1.Capacity and input correction by inverter output frequency (OUTDOOR UNIT:MXZ-18NV)

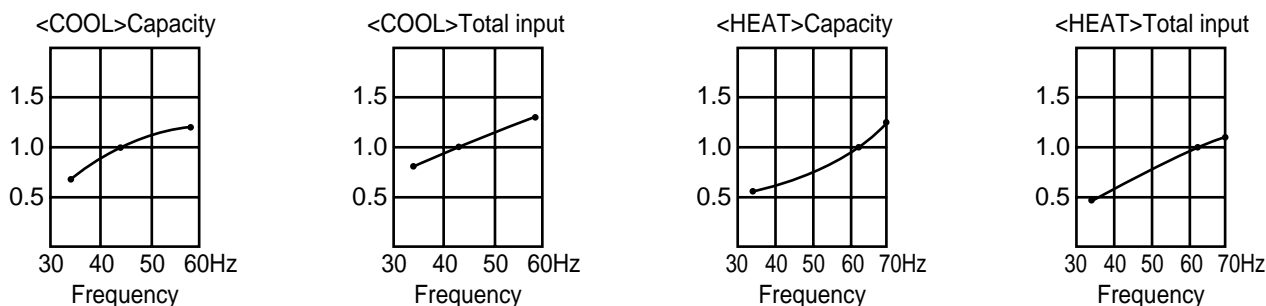
**NOTE 1 :** Inverter output frequency : COOL 58Hz,HEAT 58Hz

**NOTE 2 :** The dotted line on graphs connects the frequency range in normal operation shown by the full line and the frequency in test run shown by the point.

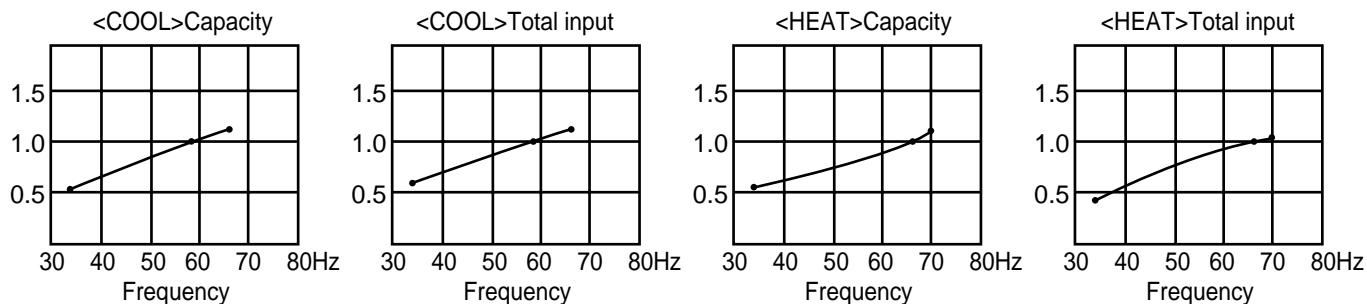
### 9.1.1.07-class unit in single operation



### 9.1.2.09-class unit in single operation



### 9.1.3.12-class unit in single operation

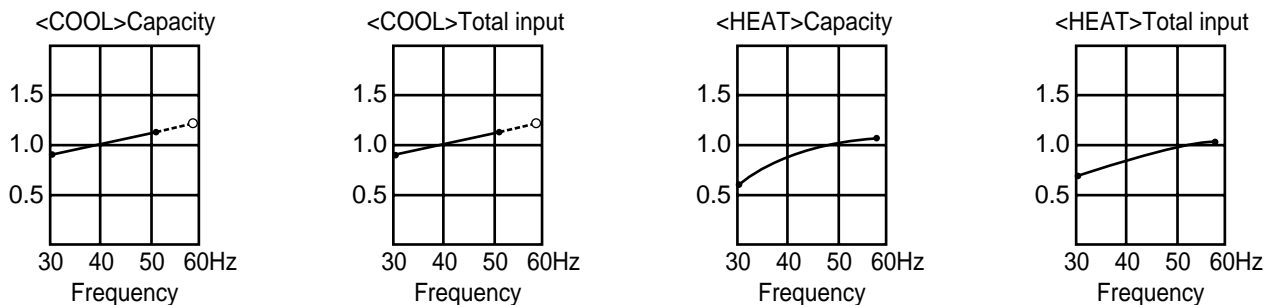


## 9.2.Capacity and input correction by inverter output frequency (OUTDOOR UNIT:MXZ-18NV)

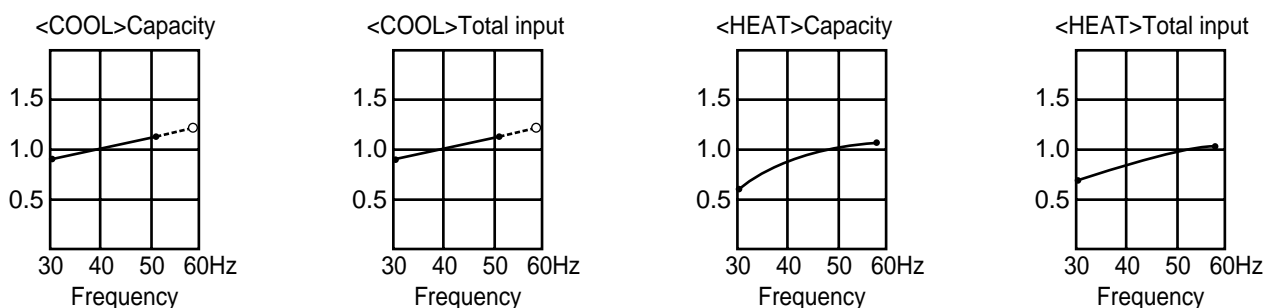
**NOTE 1** : Inverter output frequency : COOL 58Hz,HEAT 40Hz

**NOTE 2** : The dotted line on graphs connects the frequency range in normal operation shown by the full line and the frequency in test run shown by the point.

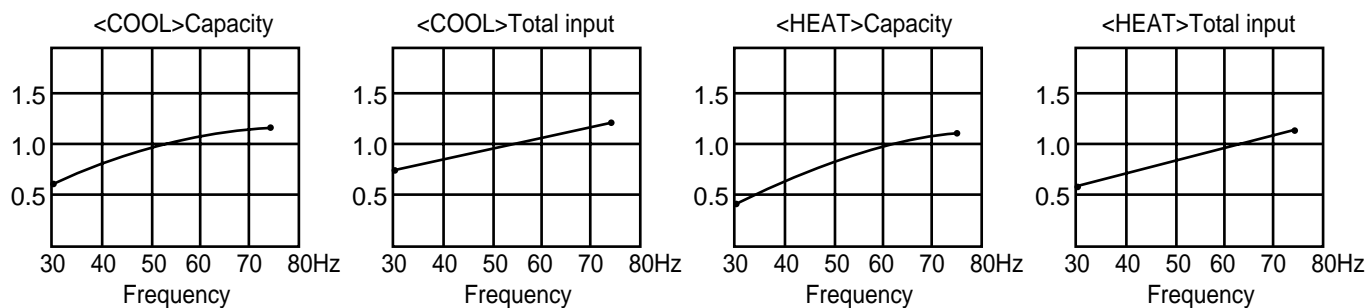
### 9.2.1.07-class unit in single operation



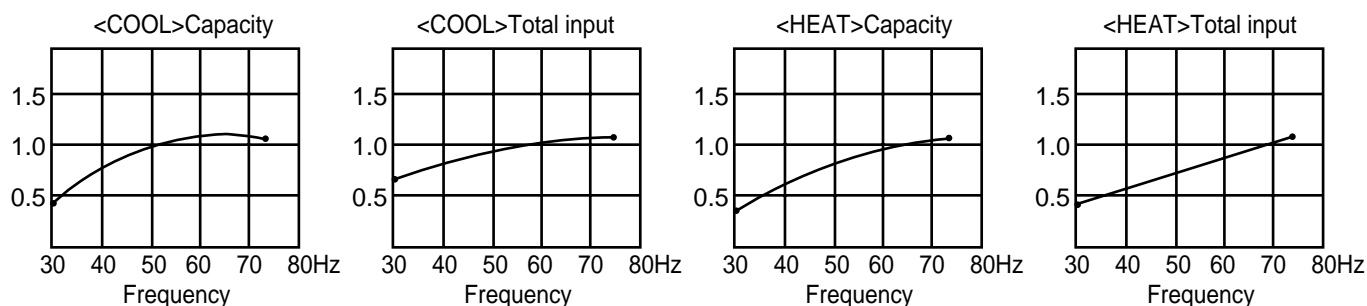
### 9.2.2.09-class unit in single operation



### 9.2.3.12-class unit in single operation



### 9.2.4.18-class unit in single operation



### 9.3.Outdoor low pressure and outdoor unit current

#### 9.3.1.07-class unit in single operation(OUTDOOR UNIT : MXZ-18NV)

**NOTO:**The unit of pressure has been changed to MPa on the international system of units(SI unit system).

The converted score against the traditional unit system can be gotten according to the formula below.

$$1(\text{MPa} \cdot \text{G}) = 10.2(\text{kgf}/\text{cm}^2 \cdot \text{G})$$

#### (1) COOL operation

①Both indoor and outdoor units are under the same temperature/humidity condition.

Dry-bulb temperature(°C)	Relative humidity(%)
20	50
25	60
30	70

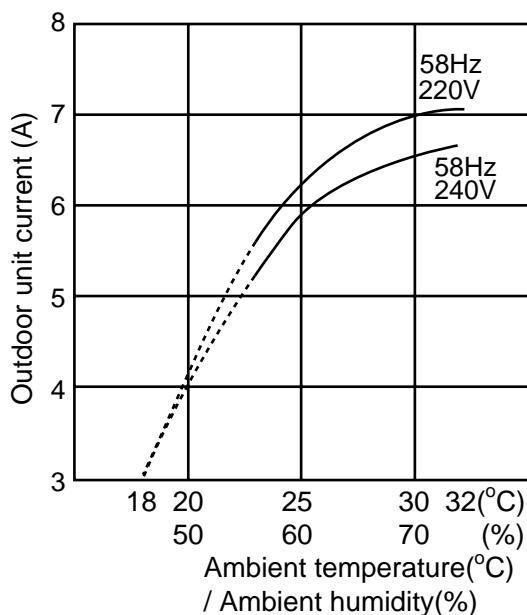
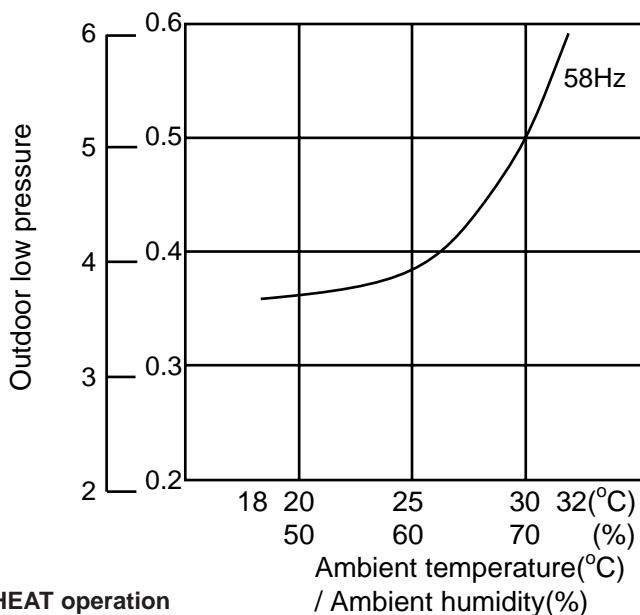
②Air flow speed : HI

③Inverter output frequency : 58Hz

<How to work fixed-frequency operation>

- 1.Set emergency switch to COOL or HEAT.The switch is located on indoor unit.
- 2.Press emergency run ON/OFF button.
- 3.Compressor starts running at 58Hz (COOL / HEAT).
- 4.Indoor fan runs at HI speed and continues for 30 minutes.
- 5.To cancel this operation,press emergency run ON/OFF button or any button on remote controller.

(kgf/cm<sup>2</sup>•G)(MPa•G)



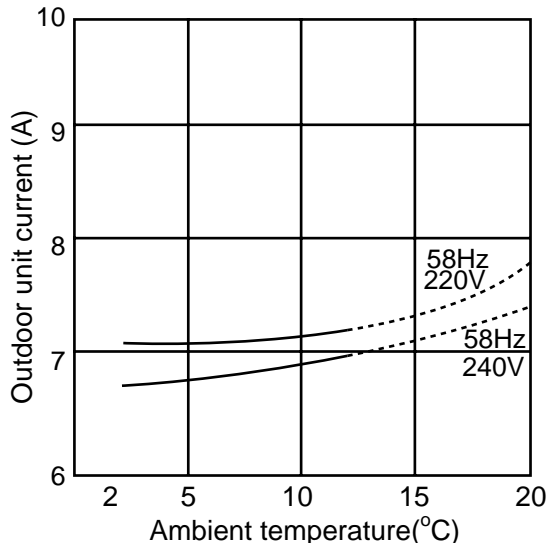
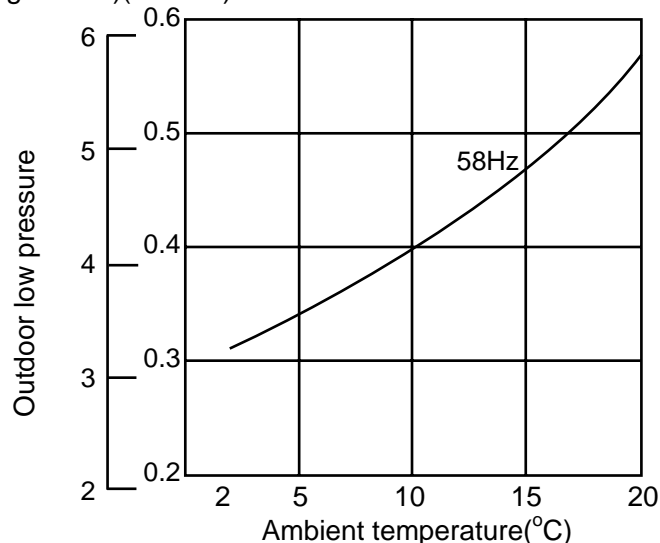
#### (2) HEAT operation

① Indoor	DB(°C)	20.0	Outdoor	DB(°C)	2	7	15	20.0
	WB(°C)	14.5		WB(°C)	1	6	12	14.5

② Set air flow to Hi speed.

③ Inverter output frequency is 58Hz.

(kgf/cm<sup>2</sup>•G)(MPa•G)



### 9.3.2.09-class unit in single operation (OUTDOOR UNIT : MXZ-18NV)

**NOTO:**The unit of pressure has been changed to MPa on the international system of units(SI unit system).

The converted score against the traditional unit system can be gotten according to the formula below.

$$1(\text{MPa} \cdot \text{G}) = 10.2(\text{kgf/cm}^2 \cdot \text{G})$$

#### (1) COOL operation

- ① Both indoor and outdoor units are under the same temperature/humidity condition.

Dry-bulb temperature(°C)	Relative humidity(%)
20	50
25	60
30	70

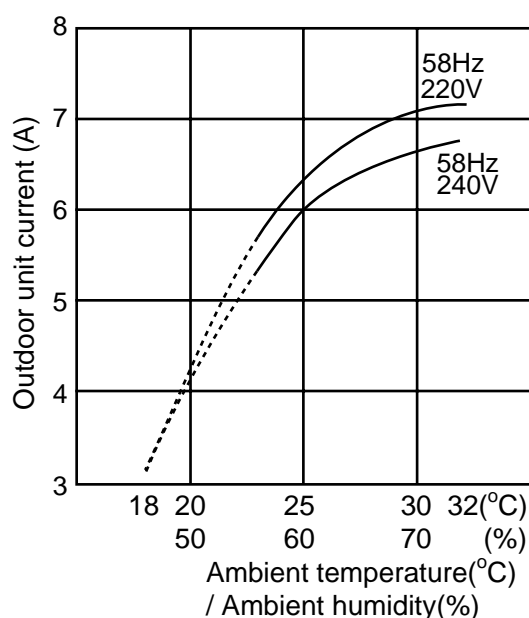
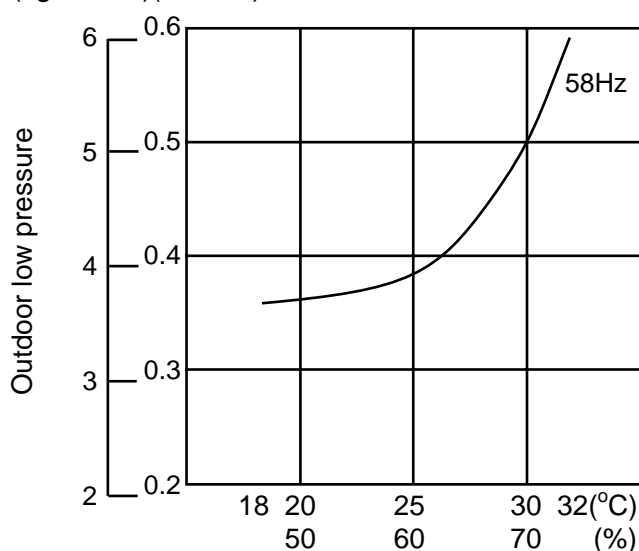
- ② Air flow speed : HI

- ③ Inverter output frequency : 58Hz

<How to work fixed-frequency operation>

- 1.Set emergency switch to COOL or HEAT.The switch is located on indoor unit.
- 2.Press emergency run ON/OFF button.
- 3.Compressor starts running at 58Hz (COOL / HEAT).
- 4.Indoor fan runs at HI speed and continues for 30 minutes.
- 5.To cancel this operation,press emergency run ON/OFF button or any button on remote controller.

(kgf/cm<sup>2</sup>•G)(MPa•G)



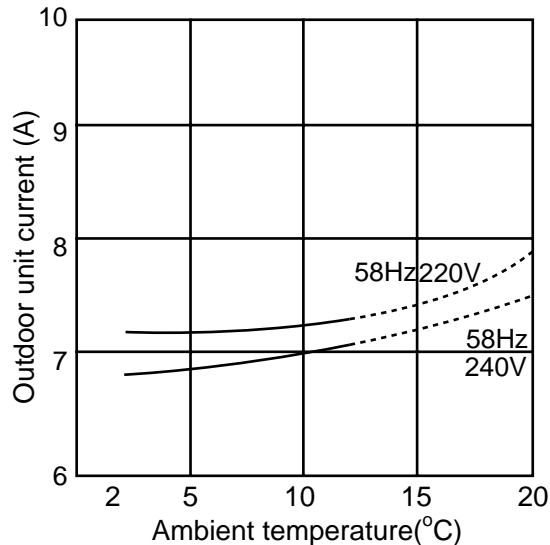
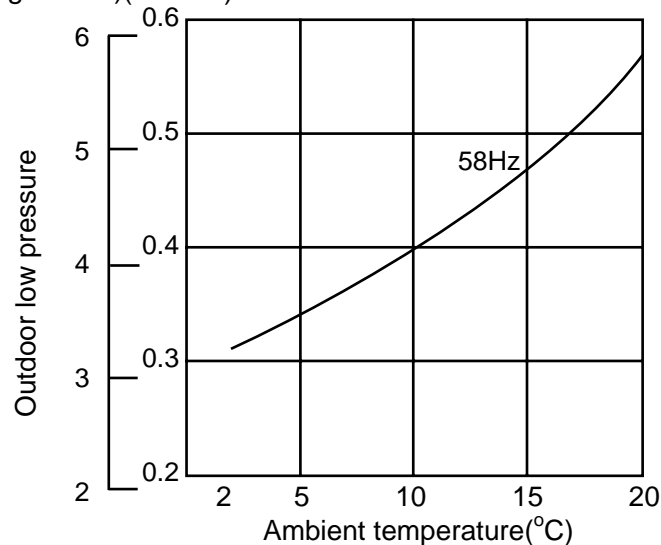
#### (2) HEAT operation

① Indoor	DB(°C)	20.0	Outdoor	DB(°C)	2	7	15	20.0
	WB(°C)	14.5		WB(°C)	1	6	12	14.5

- ② Set air flow to Hi speed.

- ③ Inverter output frequency is 58Hz.

(kgf/cm<sup>2</sup>•G)(MPa•G)





### 9.3 .3. 12-class unit in single operation (OUTDOOR UNIT : MXZ-18NV)

**NOTO:**The unit of pressure has been changed to MPa on the international system of units(SI unit system).

The converted score against the traditional unit system can be gotten according to the formula below.

$$1(\text{MPa} \cdot \text{G}) = 10.2(\text{kgf}/\text{cm}^2 \cdot \text{G})$$

#### (1) COOL operation

①Both indoor and outdoor units are under the same temperature/humidity condition.

Dry-bulb temperature(°C)	Relative humidity(%)
20	50
25	60
30	70

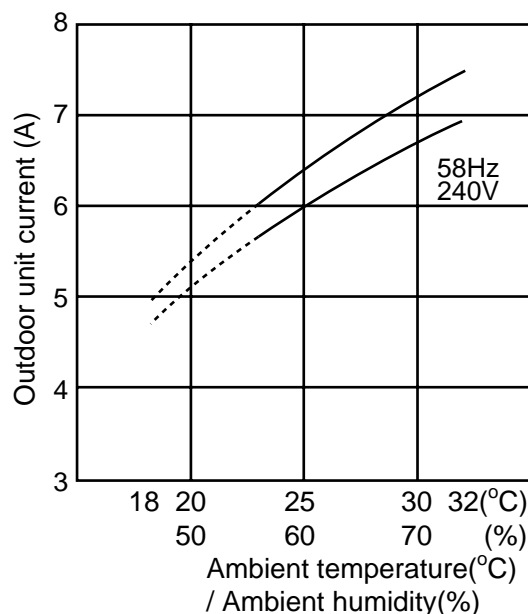
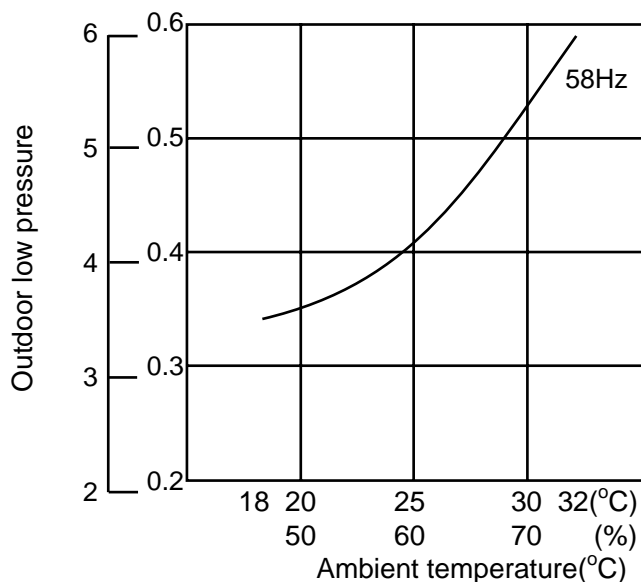
②Air flow speed : HI

③Inverter output frequency : 58Hz

<How to work fixed-frequency operation>

- 1.Set emergency switch to COOL or HEAT.The switch is located on indoor unit.
- 2.Press emergency run ON/OFF button.
- 3.Compressor starts running at 58Hz (COOL/HEAT).
- 4.Indoor fan runs at HI speed and continues for 30 minutes.
- 5.To cancel this operation,press emergency run ON/OFF button or any button on remote controller.

(kgf/cm<sup>2</sup>•G)(MPa•G)



#### (2) HEAT operation

① Indoor

DB(°C)	20.0
WB(°C)	14.5

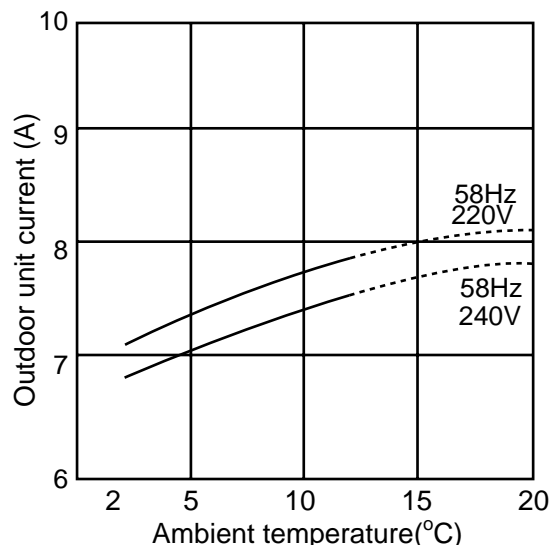
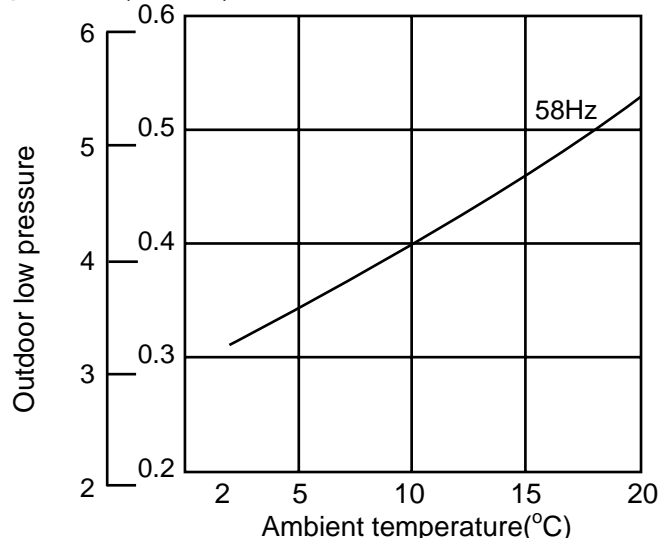
Outdoor

DB(°C)	2	7	15	20.0
WB(°C)	1	6	12	14.5

② Set air flow to Hi speed.

③ Inverter output frequency is 58Hz.

(kgf/cm<sup>2</sup>•G)(MPa•G)



## 9.4. Outdoor low pressure and outdoor unit current

### 9.4.1.07-class unit in single operation (OUTDOOR UNIT : MXZ-32NV)

**NOTO:** The unit of pressure has been changed to MPa on the international system of units (SI unit system).

The converted score against the traditional unit system can be gotten according to the formula below.

$$1(\text{MPa} \cdot \text{G}) = 10.2(\text{kgf}/\text{cm}^2 \cdot \text{G})$$

#### (1) COOL operation

① Both indoor and outdoor units are under the same temperature/humidity condition.

Dry-bulb temperature(°C)	Relative humidity(%)
20	50
25	60
30	70

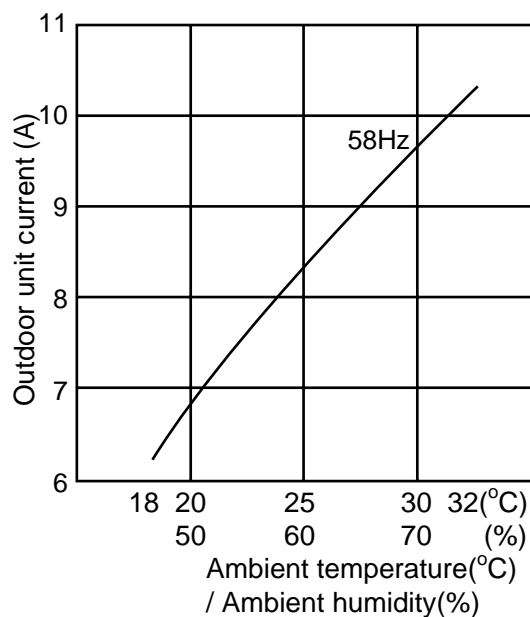
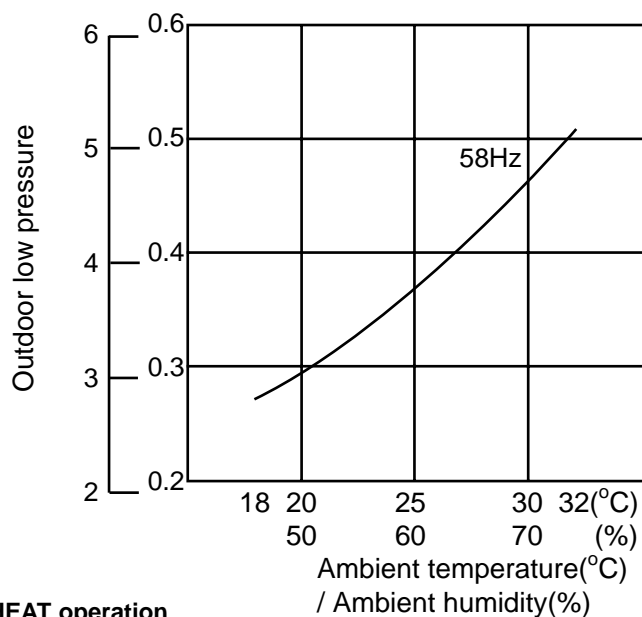
② Air flow speed : HI

③ Inverter output frequency : 58Hz

<How to work fixed-frequency operation>

1. Set emergency switch to COOL or HEAT. The switch is located on indoor unit.
2. Press emergency run ON/OFF button.
3. Compressor starts running at 58Hz (COOL) or 40Hz (HEAT).
4. Indoor fan runs at HI speed and continues for 30 minutes.
5. To cancel this operation, press emergency run ON/OFF button or any button on remote controller.

(kgf/cm<sup>2</sup>•G)(MPa•G)



#### (2) HEAT operation

① Indoor

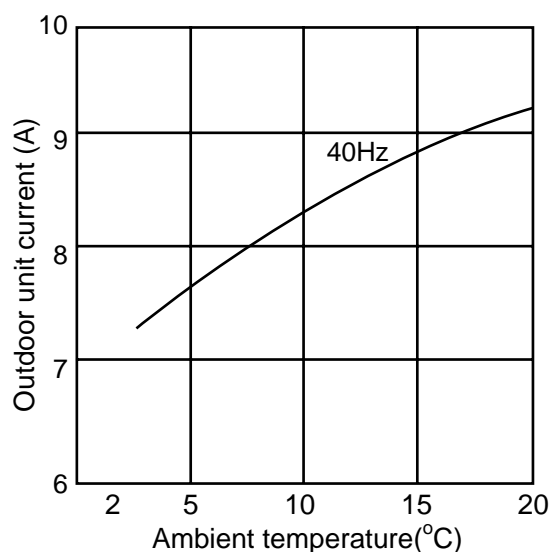
DB(°C)	20.0
WB(°C)	14.5

Outdoor

DB(°C)	2	7	15	20.0
WB(°C)	1	6	12	14.5

② Set air flow to Hi speed.

③ Inverter output frequency is 40Hz.



#### 9.4.2.09-class unit in single operation (OUTDOOR UNIT : MXZ-32NV)

**NOTO:**The unit of pressure has been changed to MPa on the international system of units(SI unit system).

The converted score against the traditional unit system can be gotten according to the formula below.

$$1(\text{MPa} \cdot \text{G}) = 10.2(\text{kgf}/\text{cm}^2 \cdot \text{G})$$

##### (1) COOL operation

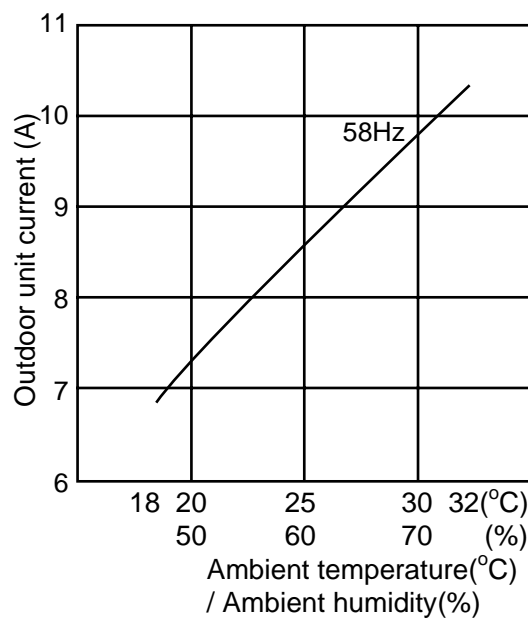
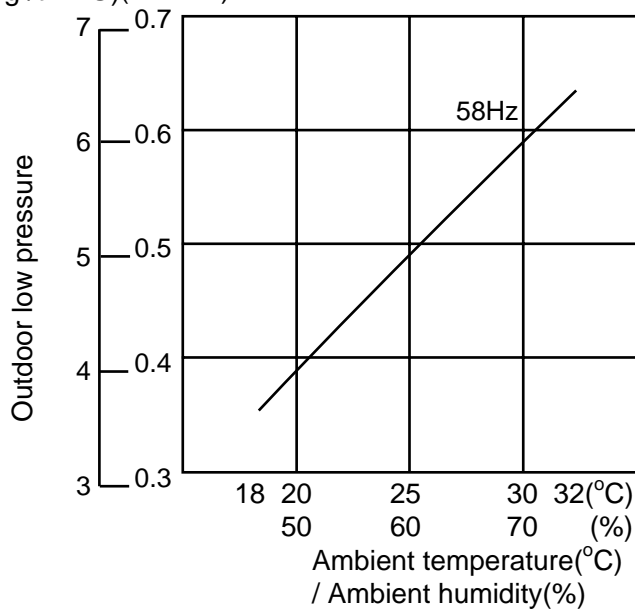
①Both indoor and outdoor units are under the same temperature/humidity condition.

Dry-bulb temperature(°C)	Relative humidity(%)
20	50
25	60
30	70

②Air flow speed : HI

③Inverter output frequency : 58Hz

(kgf/cm<sup>2</sup>•G)(MPa•G)



<How to work fixed-frequency operation>

- 1.Set emergency switch to COOL or HEAT.The switch is located on indoor unit.
- 2.Press emergency run ON/OFF button.
- 3.Compressor starts running at 58Hz (COOL) or 40Hz (HEAT).
- 4.Indoor fan runs at HI speed and continues for 30 minutes.
- 5.To cancel this operation,press emergency run ON/OFF button or any button on remote controller.

##### (2) HEAT operation

① Indoor

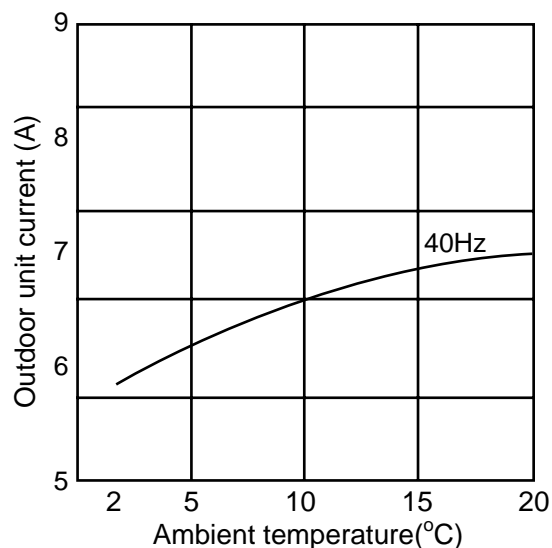
DB(°C)	20.0
WB(°C)	14.5

Outdoor

DB(°C)	2	7	15	20.0
WB(°C)	1	6	12	14.5

② Set air flow to Hi speed.

③ Inverter output frequency is 40Hz.



### 9.4.3. 12(13)-class unit in single operation (OUTDOOR UNIT : MXZ-32NV)

**NOTO:**The unit of pressure has been changed to MPa on the international system of units(SI unit system).

The converted score against the traditional unit system can be gotten according to the formula below.

$$1(\text{MPa} \cdot \text{G}) = 10.2(\text{kgf}/\text{cm}^2 \cdot \text{G})$$

#### (1) COOL operation

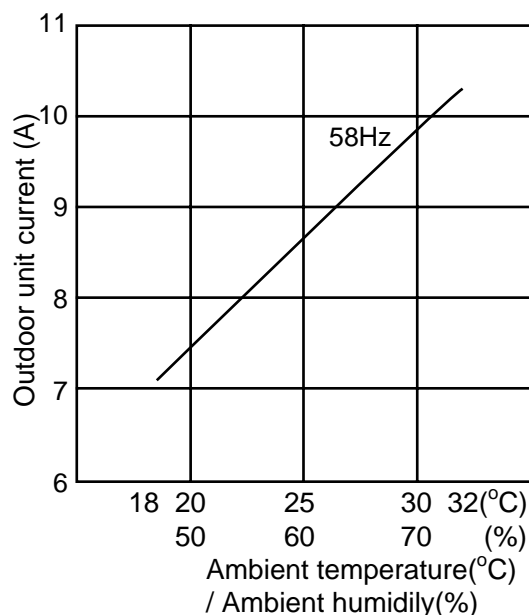
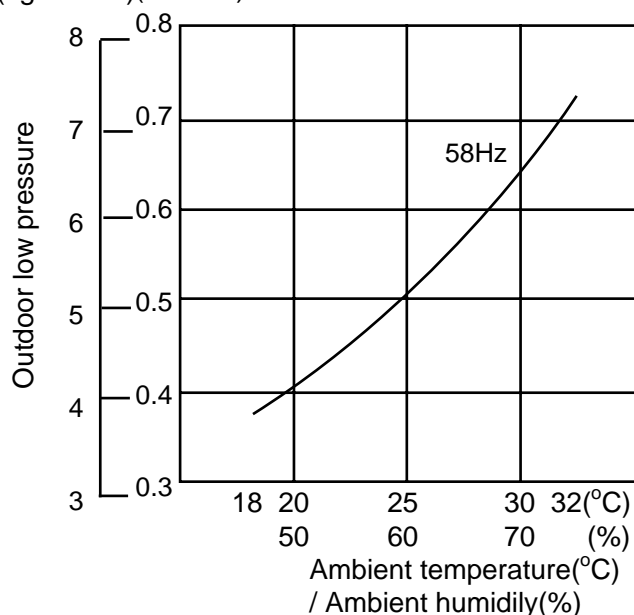
- ① Both indoor and outdoor units are under the same temperature/humidity condition.

Dry-bulb temperature(°C)	Relative humidity(%)
20	50
25	60
30	70

- ② Air flow speed : HI

- ③ Inverter output frequency : 58Hz

(kgf/cm<sup>2</sup>•G)(MPa•G)



#### (2) HEAT operation

- ① Indoor

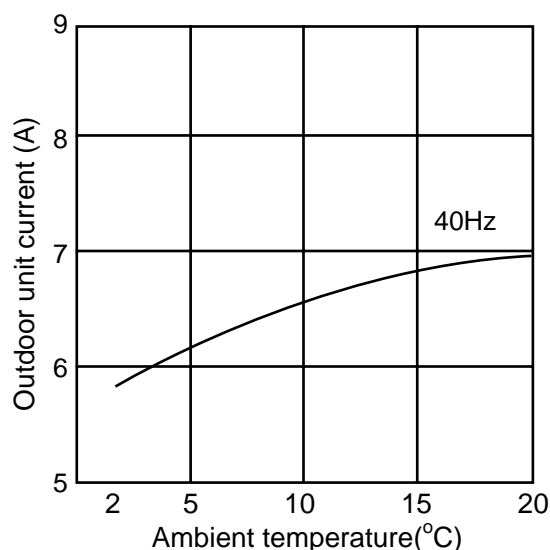
DB(°C)	20.0
WB(°C)	14.5

- Outdoor

DB(°C)	2	7	15	20.0
WB(°C)	1	6	12	14.5

- ② Set air flow to Hi speed.

- ③ Inverter output frequency is 40Hz.



#### 9.4.4. 18-class unit in single operation

**NOTO:**The unit of pressure has been changed to MPa on the international system of units(SI unit system).

The converted score against the traditional unit system can be gotten according to the formula below.

$$1(\text{MPa} \cdot \text{G}) = 10.2(\text{kgf}/\text{cm}^2 \cdot \text{G})$$

##### (1) COOL operation

- ① Both indoor and outdoor units are under the same temperature/humidity condition.

Dry-bulb temperature(°C)	Relative humidity(%)
20	50
25	60
30	70

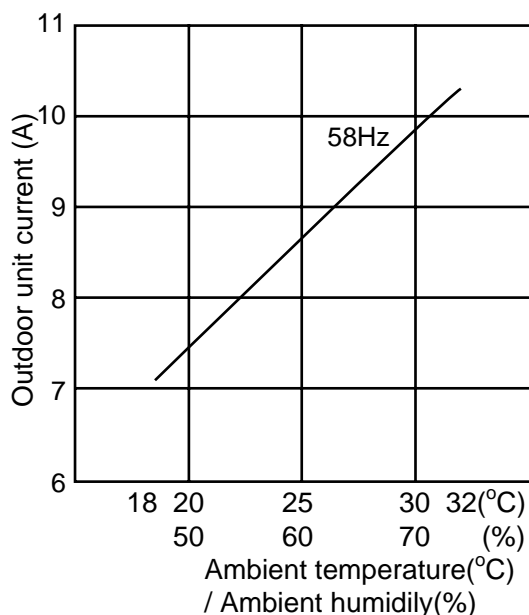
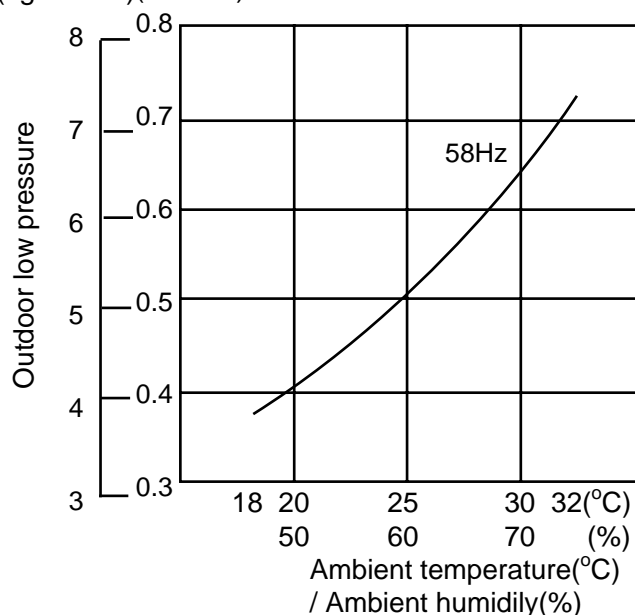
- ② Air flow speed : HI

- ③ Inverter output frequency : 58Hz

<How to work fixed-frequency operation>

- 1.Set emergency switch to COOL or HEAT.The switch is located on indoor unit.
- 2.Press emergency run ON/OFF button.
- 3.Compressor starts running at 58Hz (COOL) or 40Hz (HEAT).
- 4.Indoor fan runs at HI speed.
- 5.To cancel this operation,press emergency run ON/OFF button or any button on remote controller.

(kgf/cm<sup>2</sup>•G)(MPa•G)

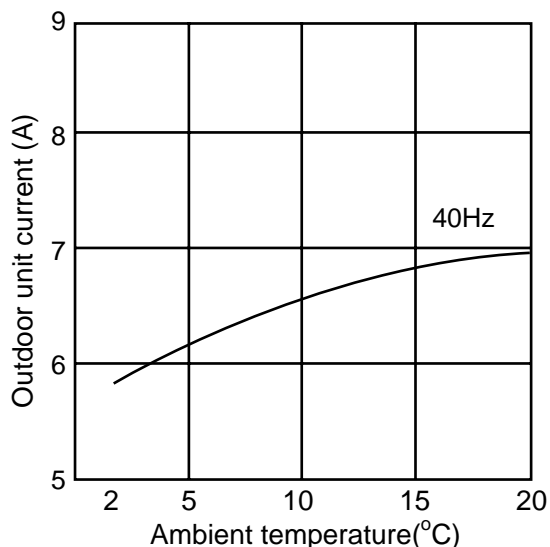


##### (2) HEAT operation

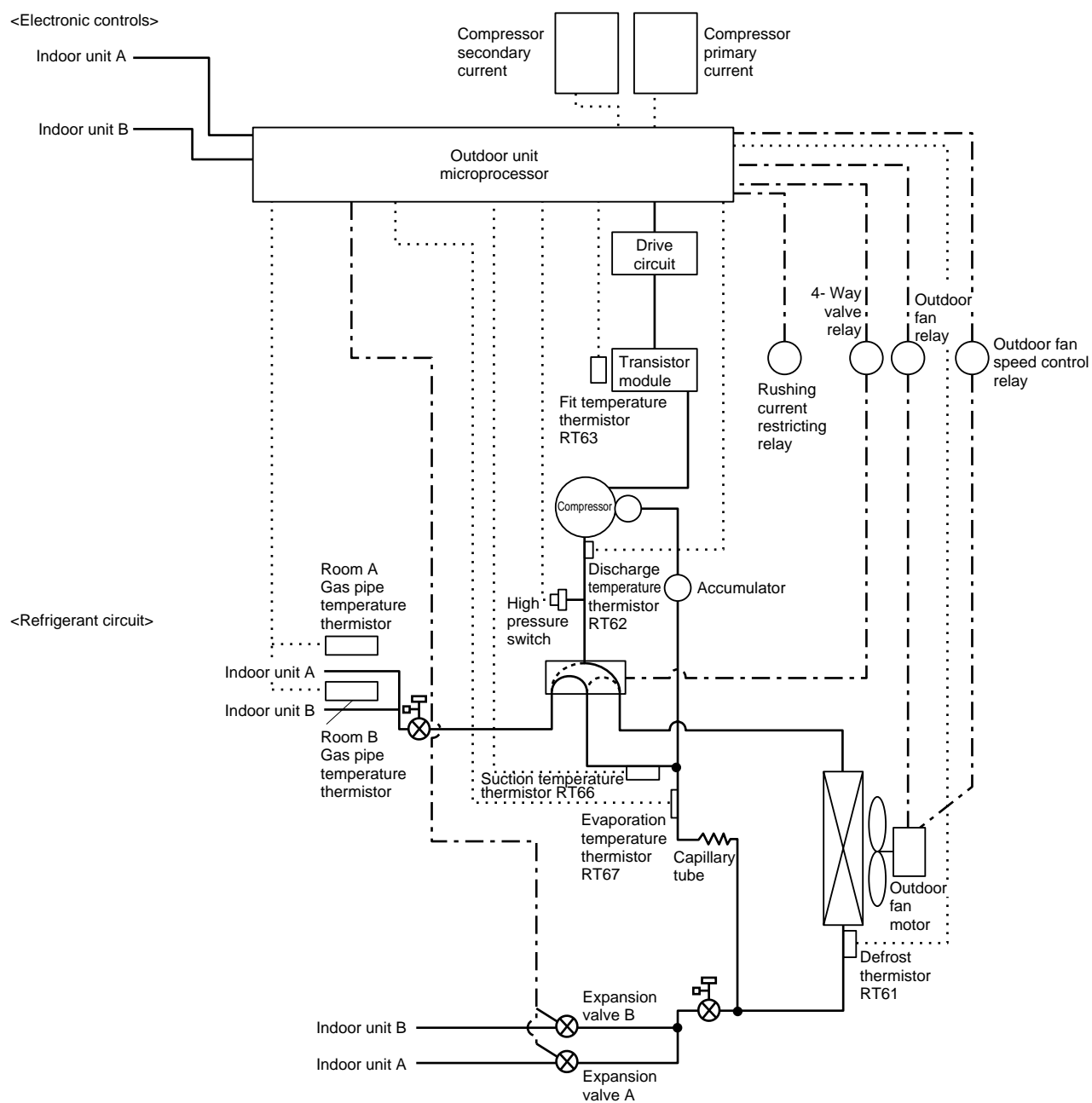
① Indoor	DB(°C)	20.0	Outdoor	DB(°C)	2	7	15	20.0
	WB(°C)	14.5		WB(°C)	1	6	12	14.5

- ② Set air flow to Hi speed.

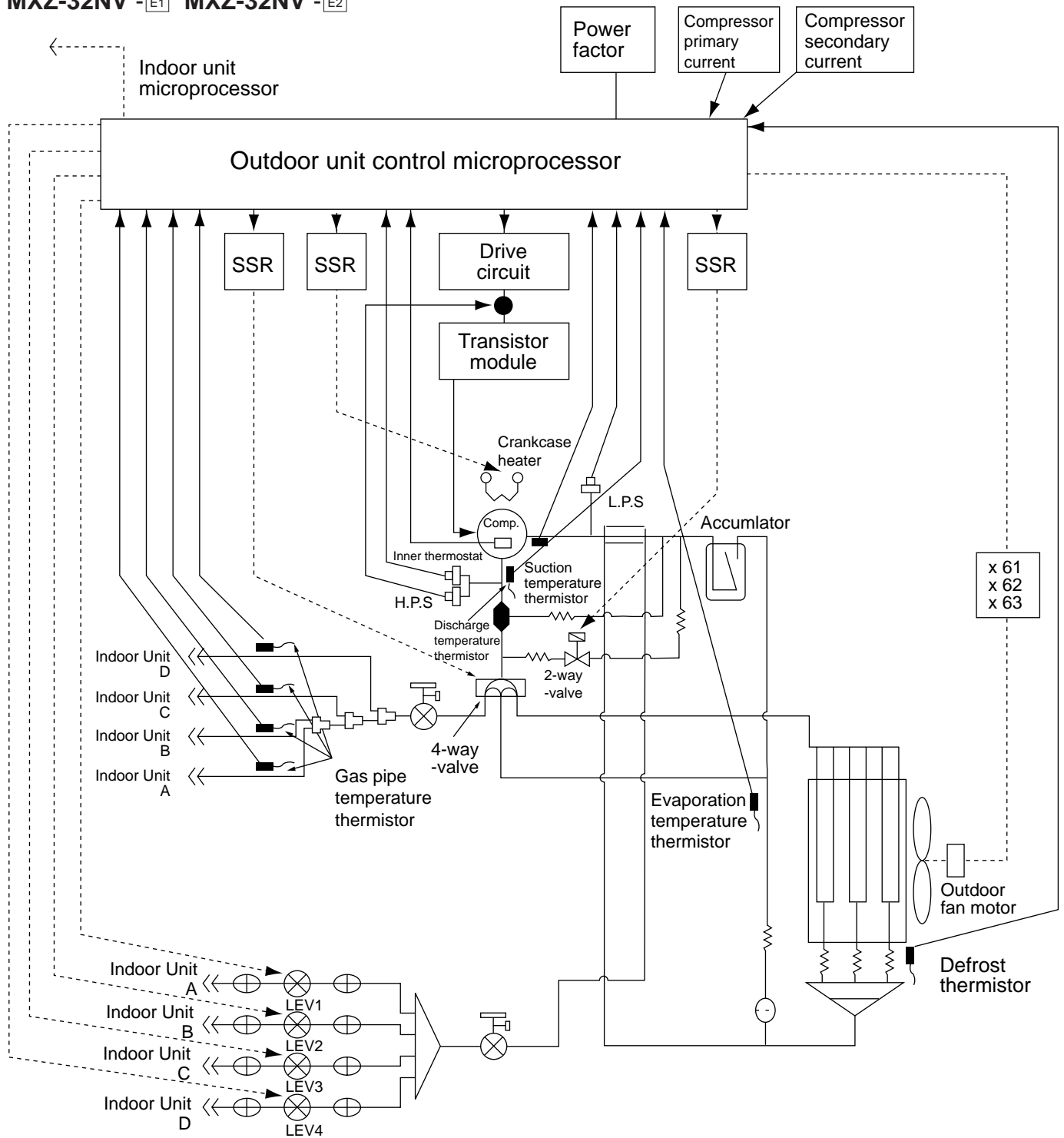
- ③ Inverter output frequency is 58Hz.



## 10.1. System organization

MXZ-18NV -<sup>[E1]</sup> MXZ-18NV -<sup>[E2]</sup>

**MXZ-32NV -E1 MXZ-32NV -E2**



No.	Item	Details																																																																																																													
1	LEV control	<p>Linear expansion valve (LEV) is controlled by "Thermostat ON" commands given from each unit.</p> <table><tr><th rowspan="2">Indoor unit status</th><th colspan="2">LEV opening</th></tr><tr><th>MXZ-18NV</th><th>MXZ-32NV</th></tr><tr><td>All indoor units OFF</td><td>Before shutdown → 350 pulse</td><td>※ 52 → 500 pulse</td></tr><tr><td>Non-opening indoor unit</td><td>COOL : 5 pulse HEAT : 49 pulse</td><td>COOL : 5 pulse HEAT : 59 pulse</td></tr><tr><td>Thermostat OFF in COOL or DRY mode</td><td>Outdoor unit ON (Indoor unit ON) : 5 pulse Outdoor unit OFF (Indoor unit OFF or Thermostat OFF) : Before shutdown</td><td>Outdoor unit ON (Indoor unit ON) : 5 pulse Outdoor unit OFF (Indoor unit OFF or Thermostat OFF) : ※ 52 → 500 pulse</td></tr><tr><td>Thermostat ON in COOL mode</td><td colspan="2">Refer to the standard LEV opening as shown below. From the initial valve, the LEV opening is controlled according to suction superheat and the discharge temperature.</td></tr><tr><td>Thermostat ON in DRY mode</td><td colspan="2">Refer to the standard LEV opening as shown below.</td></tr><tr><td>Thermostat OFF in HEAT mode</td><td>Outdoor unit ON (Indoor unit ON) : 49 pulse Outdoor unit OFF (Indoor unit OFF or Thermostat OFF) : Before shutdown</td><td>Outdoor unit ON (Indoor unit ON) : 5 pulse Outdoor unit OFF (Indoor unit OFF or Thermostat OFF) : ※ 52 → 500 pulse</td></tr><tr><td>Thermostat ON in HEAT mode</td><td colspan="2">Refer to the standard LEV opening as shown below. From the initial valve, the LEV opening is controlled according to the suction superheat and the discharge temperature.</td></tr></table> <p>※ For the differential start-up, the LEV is controlled at 52 pulse for the first 15 minutes after compressor stop.</p> <div><div>Standard LEV opening</div><p>There are 10 levels specified for standard LEV opening depending on the compressor operational frequency. Based on these standard valves, the LEV opening is modified according to the suction superheat, discharge temperature, and gas pipe temperature.</p><p>&lt;LEV opening&gt;</p><p>Hysteresis width = 5Hz</p><p>&lt;Standard LEV opening by capacity code&gt;</p><table><tr><th rowspan="2">Capacity class</th><th>MXZ-18NV-E1</th><th colspan="2">MXZ-18NV-E2</th><th colspan="3">MXZ-32NV-E1,E2</th></tr><tr><th>09</th><th>07,09</th><th>12</th><th>07,09</th><th>12,13</th><th>18</th></tr><tr><td>Level 01</td><td>100/70</td><td>255/70</td><td>255/90</td><td>100/70</td><td>130/90</td><td>145/100</td></tr><tr><td>Level 02</td><td>100/70</td><td>255/70</td><td>255/90</td><td>100/70</td><td>130/90</td><td>145/100</td></tr><tr><td>Level 03</td><td>100/70</td><td>255/70</td><td>255/90</td><td>100/90</td><td>130/110</td><td>145/120</td></tr><tr><td>Level 04</td><td>100/70</td><td>255/70</td><td>255/90</td><td>100/110</td><td>130/130</td><td>145/140</td></tr><tr><td>Level 05</td><td>100/70</td><td>255/70</td><td>255/90</td><td>100/130</td><td>130/150</td><td>145/160</td></tr><tr><td>Level 06</td><td>110/80</td><td>255/80</td><td>255/100</td><td>110/150</td><td>140/170</td><td>155/180</td></tr><tr><td>Level 07</td><td>120/90</td><td>255/90</td><td>255/110</td><td>120/170</td><td>150/190</td><td>165/200</td></tr><tr><td>Level 08</td><td>130/100</td><td>255/100</td><td>255/120</td><td>130/190</td><td>160/210</td><td>175/220</td></tr><tr><td>Level 09</td><td>140/110</td><td>255/110</td><td>255/130</td><td>140/210</td><td>170/230</td><td>185/240</td></tr><tr><td>Level 10</td><td>150/120</td><td>255/120</td><td>255/140</td><td>150/230</td><td>180/250</td><td>195/260</td></tr></table></div>	Indoor unit status	LEV opening		MXZ-18NV	MXZ-32NV	All indoor units OFF	Before shutdown → 350 pulse	※ 52 → 500 pulse	Non-opening indoor unit	COOL : 5 pulse HEAT : 49 pulse	COOL : 5 pulse HEAT : 59 pulse	Thermostat OFF in COOL or DRY mode	Outdoor unit ON (Indoor unit ON) : 5 pulse Outdoor unit OFF (Indoor unit OFF or Thermostat OFF) : Before shutdown	Outdoor unit ON (Indoor unit ON) : 5 pulse Outdoor unit OFF (Indoor unit OFF or Thermostat OFF) : ※ 52 → 500 pulse	Thermostat ON in COOL mode	Refer to the standard LEV opening as shown below. From the initial valve, the LEV opening is controlled according to suction superheat and the discharge temperature.		Thermostat ON in DRY mode	Refer to the standard LEV opening as shown below.		Thermostat OFF in HEAT mode	Outdoor unit ON (Indoor unit ON) : 49 pulse Outdoor unit OFF (Indoor unit OFF or Thermostat OFF) : Before shutdown	Outdoor unit ON (Indoor unit ON) : 5 pulse Outdoor unit OFF (Indoor unit OFF or Thermostat OFF) : ※ 52 → 500 pulse	Thermostat ON in HEAT mode	Refer to the standard LEV opening as shown below. From the initial valve, the LEV opening is controlled according to the suction superheat and the discharge temperature.		Capacity class	MXZ-18NV-E1	MXZ-18NV-E2		MXZ-32NV-E1,E2			09	07,09	12	07,09	12,13	18	Level 01	100/70	255/70	255/90	100/70	130/90	145/100	Level 02	100/70	255/70	255/90	100/70	130/90	145/100	Level 03	100/70	255/70	255/90	100/90	130/110	145/120	Level 04	100/70	255/70	255/90	100/110	130/130	145/140	Level 05	100/70	255/70	255/90	100/130	130/150	145/160	Level 06	110/80	255/80	255/100	110/150	140/170	155/180	Level 07	120/90	255/90	255/110	120/170	150/190	165/200	Level 08	130/100	255/100	255/120	130/190	160/210	175/220	Level 09	140/110	255/110	255/130	140/210	170/230	185/240	Level 10	150/120	255/120	255/140	150/230	180/250	195/260
Indoor unit status	LEV opening																																																																																																														
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Level 01	100/70	255/70	255/90	100/70	130/90	145/100																																																																																																									
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Level 04	100/70	255/70	255/90	100/110	130/130	145/140																																																																																																									
Level 05	100/70	255/70	255/90	100/130	130/150	145/160																																																																																																									
Level 06	110/80	255/80	255/100	110/150	140/170	155/180																																																																																																									
Level 07	120/90	255/90	255/110	120/170	150/190	165/200																																																																																																									
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No.	Item	Details																																																																																																																																																																																																																														
		<p>① LEV opening correction by suction superheat (Suction superheat) = (Suction temperature) - (Evaporation temperature) The LEV opening is corrected as shown in the following table.</p> <table><tr><th rowspan="3">Suction superheat (S.H.)</th><th colspan="6">LEV opening correction (pulse)</th></tr><tr><th colspan="2">MXZ-18NV-[E1]</th><th colspan="2">MXZ-18NV-[E2]</th><th colspan="2">MXZ-32NV-[E1] [E2]</th></tr><tr><th>Cooling</th><th>Heating</th><th>Cooling</th><th>Heating</th><th>Cooling</th><th>Heating</th></tr><tr><td>10 &lt; S.H</td><td>20</td><td>15</td><td>40</td><td>15</td><td>20</td><td>10</td></tr><tr><td>8 &lt; S.H ≤ 10</td><td>15</td><td>10</td><td>30</td><td>10</td><td>15</td><td>10</td></tr><tr><td>7 &lt; S.H ≤ 8</td><td>15</td><td>10</td><td>30</td><td>10</td><td>15</td><td>10</td></tr><tr><td>5 &lt; S.H ≤ 7</td><td>8</td><td>5</td><td>16</td><td>5</td><td>7</td><td>5</td></tr><tr><td>4 &lt; S.H ≤ 5</td><td>4</td><td>3</td><td>8</td><td>3</td><td>0</td><td>0</td></tr><tr><td>2 &lt; S.H ≤ 4</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>0 &lt; S.H ≤ 2</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>S.H ≤ 0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr></table> <p>② LEV opening correction by discharge temperature The LEV opening is corrected to 55 pulse when it has been corrected consecutively 20 times due to the discharge temperature (Td) of 60℃ or below, or when the discharge temperature falls below 35℃. When such a status has continued for 10 minutes, the compressor stops and enters the 3 - minute time delay. If the compressor stops five times during a continuous operation, the unit stops due to abnormality.</p> <table><tr><th colspan="10">LEV opening correction (pulse)</th></tr><tr><th colspan="3" rowspan="2">MXZ-18NV-[E1] [E2]</th><th colspan="7">MXZ-32NV-[E1] [E2]</th></tr><tr><th colspan="3">Two units or more</th><th colspan="4">For capacity class 07 or 09 in single unit operation</th></tr><tr><th>Discharge temperature (℃)</th><th>Cooling</th><th>Heating</th><th>Discharge temperature (℃)</th><th>Cooling</th><th>Heating</th><th>Discharge temperature (℃)</th><th>Cooling</th><th>Discharge temperature (℃)</th><th>Heating</th></tr><tr><td>100 &lt; Td</td><td>5</td><td>20</td><td>100 &lt; Td</td><td>10</td><td>10</td><td>100 &lt; Td</td><td>10</td><td>100 &lt; Td</td><td>10</td></tr><tr><td>95 &lt; Td ≤ 100</td><td>5</td><td>20</td><td>95 &lt; Td ≤ 100</td><td>5</td><td>10</td><td>95 &lt; Td ≤ 100</td><td>10</td><td>95 &lt; Td ≤ 100</td><td>10</td></tr><tr><td>90 &lt; Td ≤ 95</td><td>5</td><td>20</td><td>90 &lt; Td ≤ 95</td><td>0</td><td>5</td><td>92 &lt; Td ≤ 95</td><td>10</td><td>90 &lt; Td ≤ 95</td><td>10</td></tr><tr><td>85 &lt; Td ≤ 90</td><td>1</td><td>20</td><td>85 &lt; Td ≤ 90</td><td>-2</td><td>5</td><td>85 &lt; Td ≤ 92</td><td>5</td><td>85 &lt; Td ≤ 90</td><td>5</td></tr><tr><td>80 &lt; Td ≤ 85</td><td>0</td><td>20</td><td>80 &lt; Td ≤ 85</td><td>-2</td><td>0</td><td>80 &lt; Td ≤ 85</td><td>0</td><td>80 &lt; Td ≤ 85</td><td>5</td></tr><tr><td>75 &lt; Td ≤ 80</td><td>-2</td><td>2</td><td>75 &lt; Td ≤ 80</td><td>-5</td><td>0</td><td>75 &lt; Td ≤ 80</td><td>-2</td><td>73 &lt; Td ≤ 80</td><td>0</td></tr><tr><td>70 &lt; Td ≤ 75</td><td>-2</td><td>0</td><td>70 &lt; Td ≤ 75</td><td>-5</td><td>-2</td><td>70 &lt; Td ≤ 75</td><td>-2</td><td>65 &lt; Td ≤ 73</td><td>-2</td></tr><tr><td>65 &lt; Td ≤ 70</td><td>-2</td><td>-3</td><td>65 &lt; Td ≤ 70</td><td>-5</td><td>-2</td><td>60 &lt; Td ≤ 70</td><td>-5</td><td>60 &lt; Td ≤ 65</td><td>-5</td></tr><tr><td>60 &lt; Td ≤ 65</td><td>-2</td><td>-3</td><td>Td ≤ 65</td><td>-5</td><td>-2</td><td>Td ≤ 60</td><td>-5</td><td>Td ≤ 60</td><td>-5</td></tr><tr><td>Td ≤ 60</td><td>-5</td><td>-12</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr></table> <p>※ For capacity class 12(13) or 18 in single-unit operation, the stabilized range shifts to the next higher level. ( I. e. Cooling : 85&lt;Td≤92 ) Heating : 80&lt;Td≤91 )</p> <p>③ LEV opening correction by gas pipe temperature (effective in cooling operation only.) (1) Maximum correction width : +14 pulse (2) Single correction width : 1, 2, or 3 pulse (3) Control details 1) S.H. HEX of each operating unit is calculated by using the following formula. S.H. HEX (i) = (Gas pipe temperature (i)) - (Evaporation temperature) 2) The minimum valve is selected from each S. H. HEX. 3) From S. H. HEX (i) calculated in step 1) and the minimum value obtained in step 2), the difference of each S. H. HEX (ΔS. H. HEX (i)) is calculated as follows. ΔS. H. HEX (i) = (S. H. HEX (i) - S. H. HEX (min)) 4) Each LEV opening is controlled based on ΔS. H. HEX (i) obtained in step 4). ΔS. H. HEX (i) and LEV control width</p> <table><tr><th>Range of ΔS. H. HEX (i)</th><th>LEV variation for corresponding unit</th></tr><tr><td>ΔS. H. HEX (i)≤3 deg</td><td>0</td></tr><tr><td>3&lt;ΔS. H. HEX (i)≤6 deg</td><td>+1</td></tr><tr><td>6&lt;ΔS. H. HEX (i)≤9 deg</td><td>+2</td></tr><tr><td>9&lt;ΔS. H. HEX (i)</td><td>+3</td></tr></table>	Suction superheat (S.H.)	LEV opening correction (pulse)						MXZ-18NV-[E1]		MXZ-18NV-[E2]		MXZ-32NV-[E1] [E2]		Cooling	Heating	Cooling	Heating	Cooling	Heating	10 < S.H	20	15	40	15	20	10	8 < S.H ≤ 10	15	10	30	10	15	10	7 < S.H ≤ 8	15	10	30	10	15	10	5 < S.H ≤ 7	8	5	16	5	7	5	4 < S.H ≤ 5	4	3	8	3	0	0	2 < S.H ≤ 4	0	0	0	0	0	0	0 < S.H ≤ 2	0	0	0	0	0	0	S.H ≤ 0	0	0	0	0	0	0	LEV opening correction (pulse)										MXZ-18NV-[E1] [E2]			MXZ-32NV-[E1] [E2]							Two units or more			For capacity class 07 or 09 in single unit operation				Discharge temperature (℃)	Cooling	Heating	Discharge temperature (℃)	Cooling	Heating	Discharge temperature (℃)	Cooling	Discharge temperature (℃)	Heating	100 < Td	5	20	100 < Td	10	10	100 < Td	10	100 < Td	10	95 < Td ≤ 100	5	20	95 < Td ≤ 100	5	10	95 < Td ≤ 100	10	95 < Td ≤ 100	10	90 < Td ≤ 95	5	20	90 < Td ≤ 95	0	5	92 < Td ≤ 95	10	90 < Td ≤ 95	10	85 < Td ≤ 90	1	20	85 < Td ≤ 90	-2	5	85 < Td ≤ 92	5	85 < Td ≤ 90	5	80 < Td ≤ 85	0	20	80 < Td ≤ 85	-2	0	80 < Td ≤ 85	0	80 < Td ≤ 85	5	75 < Td ≤ 80	-2	2	75 < Td ≤ 80	-5	0	75 < Td ≤ 80	-2	73 < Td ≤ 80	0	70 < Td ≤ 75	-2	0	70 < Td ≤ 75	-5	-2	70 < Td ≤ 75	-2	65 < Td ≤ 73	-2	65 < Td ≤ 70	-2	-3	65 < Td ≤ 70	-5	-2	60 < Td ≤ 70	-5	60 < Td ≤ 65	-5	60 < Td ≤ 65	-2	-3	Td ≤ 65	-5	-2	Td ≤ 60	-5	Td ≤ 60	-5	Td ≤ 60	-5	-12	-	-	-	-	-	-	-	Range of ΔS. H. HEX (i)	LEV variation for corresponding unit	ΔS. H. HEX (i)≤3 deg	0	3<ΔS. H. HEX (i)≤6 deg	+1	6<ΔS. H. HEX (i)≤9 deg	+2	9<ΔS. H. HEX (i)	+3
Suction superheat (S.H.)	LEV opening correction (pulse)																																																																																																																																																																																																																															
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8 < S.H ≤ 10	15	10	30	10	15	10																																																																																																																																																																																																																										
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70 < Td ≤ 75	-2	0	70 < Td ≤ 75	-5	-2	70 < Td ≤ 75	-2	65 < Td ≤ 73	-2																																																																																																																																																																																																																							
65 < Td ≤ 70	-2	-3	65 < Td ≤ 70	-5	-2	60 < Td ≤ 70	-5	60 < Td ≤ 65	-5																																																																																																																																																																																																																							
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No.	Item	Details																																																																												
2	Control by the number of operating indoor unit	<p>The compressor operational frequency and the LEV opening are controlled depending on the number of operating indoor units.</p> <p>(1)Compressor operational frequency</p> <ul style="list-style-type: none"><li>The variable range of compressor operational frequency changes according to the operation signal (capacity code and temperature difference) given from the operating indoor unit (s). When the number of operating indoor units is reduced during heating operation, the operational frequency will decrease by 20 Hz in one minute. After that, the operational frequency will return to the variable status.</li></ul> <p>(2) LEV opening</p> <ul style="list-style-type: none"><li>The LEV opening varies according to the operation signal given from the operating indoor unit (s). When the number of operating indoor units is reduced during heating operation, the LEV opening will be fixed to the current valve for one minute. After that, the LEV opening will return to the variable status.</li></ul>																																																																												
3	Selection of operation mode	<p>1. When a single indoor unit is operating, the system operates in the mode as selected by that indoor unit.</p> <p>2. When two indoor units are operating in the same mode, the system operates in that mode.</p> <p>3. Simultaneous COOL and HEAR operation is unavailable within a system. The indoor unit activated earlier has the priority to decide the operation mode of the system. The other unit enters the standby status when it receives the order to operate in a different mode. To operate these units in the same mode from such a status, reset both units to the same operation mode, turned them off, and then turn them back on.</p> <p>4. Simultaneous COOL and DRY operation is available within a system. In this case, the outdoor unit operates in the COOL mode. (The outdoor unit operates in the DRY mode only when all the indoor units are operating in the DRY mode.)</p>																																																																												
4	Outdoor fan control	<p>The outdoor fan turns ON according to "Compressor ON" commands given from each indoor unit.</p> <table><tr><td></td><td colspan="2">MXZ-18NV-[E1]</td><td colspan="2">MXZ-18NV-[E2]</td></tr><tr><td>Number of operating indoor unit</td><td>One unit</td><td>Two unit</td><td>One unit</td><td>Two unit</td></tr><tr><td>Cooling</td><td>Hi</td><td>Hi</td><td>Hi</td><td>Hi</td></tr><tr><td>Heating</td><td>Low</td><td>Hi</td><td>Hi</td><td>Hi</td></tr></table> <table><tr><td colspan="5">MXZ-32NV-[E1] [E2]</td></tr><tr><td>Number of operating indoor unit</td><td>One unit</td><td>Two unit</td><td>Three unit</td><td>Four unit</td></tr><tr><td>1</td><td rowspan="4">Low</td><td></td><td></td><td></td></tr><tr><td>2</td><td>Low</td><td></td><td></td></tr><tr><td>3</td><td></td><td></td><td></td></tr><tr><td>4</td><td></td><td></td><td></td></tr><tr><td>5</td><td></td><td rowspan="4">Me</td><td rowspan="4">Me</td><td rowspan="4">Me</td></tr><tr><td>6</td><td></td></tr><tr><td>7</td><td></td></tr><tr><td>8</td><td></td></tr><tr><td>9</td><td></td><td></td><td></td><td></td></tr><tr><td>10</td><td></td><td></td><td></td><td></td></tr></table> <table><tr><td>Indoor unit capacity class</td><td>Capacity code</td></tr><tr><td>07/09</td><td>1</td></tr><tr><td>12(13)</td><td>3</td></tr><tr><td>18</td><td>4</td></tr></table> <p>※ The outdoor fan is controlled at High speed for the first 10 seconds after start-up. In addition, the outdoor fan speed temporarily changes to High during the compressor and inverter protection.</p> <p>a) Compressor shell overheat protection</p> <p>When a single unit is operating in a system with the LEV fully open and the discharge temperature at 95℃ or above, the outdoor fan speed changes to High. It is released when the number of operating indoor units has changed, the operation mode has changed, or the power has turned OFF.</p> <p>b) Inverter overheat protection</p> <p>When the fin temperature thermistor detects 88℃ or above, the indoor fan speed changed to High. It is released when the compressor has turned OFF.</p> <p>c) After defrosting during heating operation, the outdoor fan speed shifts to the next higher level.</p> <p>( I. e. Low to Me ) ( Me to High )</p>		MXZ-18NV-[E1]		MXZ-18NV-[E2]		Number of operating indoor unit	One unit	Two unit	One unit	Two unit	Cooling	Hi	Hi	Hi	Hi	Heating	Low	Hi	Hi	Hi	MXZ-32NV-[E1] [E2]					Number of operating indoor unit	One unit	Two unit	Three unit	Four unit	1	Low				2	Low			3				4				5		Me	Me	Me	6		7		8		9					10					Indoor unit capacity class	Capacity code	07/09	1	12(13)	3	18	4
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No.	Item	Details																																																																																					
5	Operational frequency range	<div>Compressor operational frequency range</div> <div>① COOLING</div> <div><div>MXZ-18NV-<span>E1</span></div><table><tr><th>Number of operating unit</th><th>Indoor unit capacity class</th><th>Minimum</th><th>Maximum</th><th>DRY mode</th><th>Rating</th></tr><tr><td>1</td><td>09</td><td>34</td><td>58</td><td>43</td><td>43</td></tr><tr><td>2</td><td>09+09</td><td>34</td><td>80</td><td>43</td><td>76</td></tr></table></div> <div><div>MXZ-18NV-<span>E2</span></div><table><tr><th>Number of operating unit</th><th>Indoor unit capacity class</th><th>Minimum</th><th>Maximum</th><th>DRY mode</th><th>Rating</th></tr><tr><td rowspan="2">1</td><td>07 or 09</td><td rowspan="2">34</td><td>58</td><td rowspan="2">43</td><td>43</td></tr><tr><td>12</td><td>66</td><td>58</td></tr><tr><td>2</td><td>07+12 or 09+09</td><td>34</td><td>80</td><td>43</td><td>76</td></tr></table></div> <div><div>MXZ-32NV-<span>E1</span> <span>E2</span></div><table><tr><th>Number of operating unit</th><th>Total capacity code</th><th>Minimum</th><th>Maximum</th><th>DRY mode</th><th>Rating</th></tr><tr><td rowspan="4">1</td><td>1</td><td rowspan="4">30</td><td>52</td><td rowspan="4">40</td><td>40</td></tr><tr><td>2</td><td colspan="2" rowspan="3">73</td><td rowspan="3">52</td></tr><tr><td>3</td></tr><tr><td>4</td></tr><tr><td rowspan="7">2</td><td>2</td><td rowspan="7">35</td><td>90</td><td rowspan="7">58</td><td>58</td></tr><tr><td>3</td><td colspan="2" rowspan="6">110</td><td>75</td></tr><tr><td>4</td><td rowspan="5">105</td></tr><tr><td>5</td></tr><tr><td>6</td></tr><tr><td>7</td></tr><tr><td>8</td></tr><tr><td>3</td><td>-</td><td>40</td><td>120</td><td>75</td><td>102</td></tr><tr><td>4</td><td>-</td><td>40</td><td>120</td><td>75</td><td>102</td></tr></table></div>	Number of operating unit	Indoor unit capacity class	Minimum	Maximum	DRY mode	Rating	1	09	34	58	43	43	2	09+09	34	80	43	76	Number of operating unit	Indoor unit capacity class	Minimum	Maximum	DRY mode	Rating	1	07 or 09	34	58	43	43	12	66	58	2	07+12 or 09+09	34	80	43	76	Number of operating unit	Total capacity code	Minimum	Maximum	DRY mode	Rating	1	1	30	52	40	40	2	73		52	3	4	2	2	35	90	58	58	3	110		75	4	105	5	6	7	8	3	-	40	120	75	102	4	-	40	120	75	102
Number of operating unit	Indoor unit capacity class	Minimum	Maximum	DRY mode	Rating																																																																																		
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		<div>Compressor operational frequency range</div> <div>② HEATING</div> <div><div>MXZ-18NV-[E1]</div><table><tr><th>Number of operating unit</th><th>Indoor unit capacity class</th><th>Minimum</th><th>Maximum</th><th>DEFROST mode</th><th>Rating</th></tr><tr><td>1</td><td>09</td><td>34</td><td>70</td><td>70</td><td>43</td></tr><tr><td>2</td><td>09+09</td><td>34</td><td>86</td><td>86</td><td>82</td></tr></table></div> <div><div>MXZ-18NV-[E2]</div><table><tr><th>Number of operating unit</th><th>Indoor unit capacity class</th><th>Minimum</th><th>Maximum</th><th>DEFROST mode</th><th>Rating</th></tr><tr><td rowspan="2">1</td><td>07 or 09</td><td rowspan="2">34</td><td rowspan="2">70</td><td rowspan="2">70</td><td>62</td></tr><tr><td>12</td><td>66</td></tr><tr><td rowspan="2">2</td><td>09+09</td><td rowspan="2">34</td><td rowspan="2">86</td><td rowspan="2">86</td><td>82</td></tr><tr><td>07+12</td><td>84</td></tr></table></div> <div><div>MXZ-32NV-[E1] [E2]</div><table><tr><th>Number of operating unit</th><th>Total capacity code</th><th>Minimum</th><th>Maximum</th><th>DEFROST mode</th><th>Rating</th></tr><tr><td rowspan="3">1</td><td>1</td><td rowspan="3">30</td><td>58</td><td rowspan="13">105</td><td>45</td></tr><tr><td>2</td><td rowspan="2">73</td><td rowspan="2">65</td></tr><tr><td>3</td></tr><tr><td rowspan="8">2</td><td>4</td><td rowspan="8">40</td><td rowspan="3">95</td><td>58</td></tr><tr><td>2</td><td rowspan="2">75</td><td rowspan="2">107</td></tr><tr><td>3</td></tr><tr><td>4</td><td rowspan="4">115</td></tr><tr><td>5</td></tr><tr><td>6</td></tr><tr><td>7</td></tr><tr><td>8</td></tr><tr><td>3</td><td>-</td><td>48</td><td>120</td><td>112</td></tr><tr><td>4</td><td>-</td><td>48</td><td>120</td><td>105</td></tr></table></div>	Number of operating unit	Indoor unit capacity class	Minimum	Maximum	DEFROST mode	Rating	1	09	34	70	70	43	2	09+09	34	86	86	82	Number of operating unit	Indoor unit capacity class	Minimum	Maximum	DEFROST mode	Rating	1	07 or 09	34	70	70	62	12	66	2	09+09	34	86	86	82	07+12	84	Number of operating unit	Total capacity code	Minimum	Maximum	DEFROST mode	Rating	1	1	30	58	105	45	2	73	65	3	2	4	40	95	58	2	75	107	3	4	115	5	6	7	8	3	-	48	120	112	4	-	48	120	105
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6	Defrosting in heating	<div>&lt;Conditions to start defrosting&gt;</div> <div>The system starts defrosting when it satisfies both of the following conditions :</div> <div>① The defrost thermistor detects -3°C or below.</div> <div>② Defrost interval (I. e. the accumulated compressor operation time) counted by the controller board has reached the prescribed value.</div> <div>&lt;Details of defrosting&gt;</div> <div>① The compressor stops for 32.5 seconds and the indoor fan turns OFF.</div> <div>② The 4 - way valve reverses and the compressor runs at the defrosting frequency.</div> <div>③ After the defrosting termination conditions are satisfied, the compressor stops for 32.5 seconds and the 4 - way valve reverses. This is the end of defrosting.</div> <div>&lt;Conditions to terminate defrosting&gt;</div> <div>The system terminates defrosting when it satisfies, either of the following conditions :</div> <div>① The defrost thermistor detects +10°C or above.</div> <div>② Defrosting time has reached 10 minutes.</div>																																																																																	
7	High and low pressure protection	<div>(1) High pressure protection in heating</div> <div>• The operational frequency, 2 - way valve (only MXZ-32NV), and outdoor fan motor are controlled according to the indoor coil temperature.</div> <div>When it rises to nearly 50°C, the operational frequency will be fixed to the value at the moment and the outdoor fan speed will change to low.</div> <div>When it rises to nearly 53°C, the operational frequency will be reduced by 4 Hz from the current value and the 2 - way valve will open.</div> <div>(2) High pressure protection by high pressure switch (H.P.S : MXZ-18NV , 63H1 : MXZ-32NV)</div> <div>• The operational frequency, 2 - way valve (only MXZ-32NV), and outdoor fan motor are controlled by the high pressure switch to protect excessive high pressure.</div> <div>&lt;Condition to active the protection&gt;</div> <div>The high pressure protection starts when the high pressure switch turns ON, that is the discharge pipe pressure rises to <math>2.75 \pm 0.05</math> MPa (<math>28 \pm 0.5</math> kg/cm<sup>2</sup>) or above.</div>																																																																																	



No.	Item	Details
		<p>&lt;Protection details&gt;</p> <p>a) In COOL or DRY mode</p> <ul style="list-style-type: none"><li>• The 2 - way valve opens.</li><li>• The compressor operational frequency decreases at a rate of 10 Hz/minute.</li></ul> <p>b) In HEAT mode</p> <ul style="list-style-type: none"><li>• The 2 - way valve opens.</li><li>• The compressor operational frequency decreases at a rate of 10 Hz/minute.</li><li>• The outdoor fan runs at the Low speed.</li></ul> <p>&lt;Condition to release the protection&gt;</p> <p>The protection is released when the high pressure switch turns OFF, that is, the discharge pipe pressure falls to <math>2.4 \pm 0.15 \text{ MPa}</math> (<math>24.5 \pm 1.5 \text{ kg/cm}^2</math>) or below.</p> <p>(3) Low pressure protection by low pressure switch (only MXZ-32NV)</p> <ul style="list-style-type: none"><li>• The compressor ON/OFF, operational frequency, 2 - way valve, and LEV opening are controlled by the low pressure switch to protect excessive low pressure.</li></ul> <p>&lt;Condition to active the protection&gt;</p> <p>The protection starts when the low pressure switch turns ON, that is, the suction pipe pressure falls to <math>0.05 \pm 0.04 \text{ MPa}</math> (<math>0.5 \pm 0.4 \text{ kg/cm}^2</math>) or below.</p> <p>&lt;Protect details&gt;</p> <ul style="list-style-type: none"><li>• The 2 - way valve opens.</li><li>• The compressor operational frequency decreases at a rate of 10 Hz/minute.</li><li>• The LEV opens at a rate of 20 pulse/minute. When such a status has continued for five minutes, the compressor will turn OFF and the error content will be displayed.</li></ul> <p>&lt;Condition to release the protection&gt;</p> <p>The protection is released when the low pressure switch turns OFF, that is, the suction pipe pressure falls to <math>0.15 \pm 0.04 \text{ MPa}</math> (<math>1.5 \pm 0.4 \text{ kg/cm}^2</math>).</p> <p>(4) High pressure protection by high pressure switch (63H2 : MXZ-32NV )</p> <ul style="list-style-type: none"><li>• The compressor is turned OFF by the high pressure switch to prevent excessive high pressure.</li></ul> <p>&lt;Condition details&gt;</p> <p>The compressor stops operation.</p> <p>&lt;Condition to release the protection&gt;</p> <ul style="list-style-type: none"><li>• The compressor is turned OFF once and turned ON again.</li></ul>



No.	Item	Details																																																																											
8	Discharge temperature protection	<ul style="list-style-type: none"><li>The compressor ON/OFF and operational frequency are controlled according to the discharge temperature.</li></ul> <p>(1) Compressor ON/OFF The compressor turns OFF when the discharge temperature thermistor rises above 120°C. The compressor turns ON when the discharge temperature thermistor falls below 80°C.</p> <p>(2) Compressor operational frequency When the estimated discharge temperature is high than 120°C, the compressor operational frequency will decrease by 8 Hz from the current operational frequency. When the estimated discharge temperature is over 115°C to 120°C inclusive, the compressor operational frequency will decrease by 4 Hz from the current operational frequency. When the estimated discharge temperature is over 107°C to 115°C inclusive, the compressor operational frequency will be fixed to the current operational frequency.</p>																																																																											
9	Refrigerant recovery in heating	<p>&lt;Conditions to active refrigerant recovery&gt; The system activates refrigerant recovery when it satisfies all the following conditions :</p> <ul style="list-style-type: none"><li>One or more indoor unit are standstill during heating operation. (It does not include the "Thermostat OFF" starts.)</li><li>The discharge temperature rises to 107°C or above.</li><li>Sixty minutes or more have passed since the operation start-up or the last refrigerant recovery.</li></ul> <p>&lt;Control details&gt; <ul style="list-style-type: none"><li>The LEV opening is controlled at 80 pulse for the non-operating indoor unit(s).</li></ul></p> <p>&lt;Conditions to discontinue refrigerant recovery&gt; The system discontinues refrigerant recovery when it satisfies either of the following conditions. Then the LEV opening is controlled to 59(MXZ-32NV) / 49(MXZ-18NV) pulse.</p> <ul style="list-style-type: none"><li>Sixty seconds have passed since the start-up of refrigerant recovery.</li><li>The discharge temperature falls to 90°C(MXZ-32NV) / 100°C(MXZ-18NV) or below.</li></ul>																																																																											
10	Sensors and actuators	<p>Relation between major sensors and actuators.</p> <table><tr><th rowspan="2">Sensor</th><th rowspan="2">Purpose</th><th colspan="5">Actuator</th></tr><tr><th>Compressor</th><th>LEV</th><th>Outdoor fan motor</th><th>4 - way valve</th><th>2-way valve (MXZ-32NV)</th></tr><tr><td>Discharge temperature thermistor</td><td>Protection</td><td>○</td><td>○</td><td></td><td></td><td></td></tr><tr><td>Defrost thermistor</td><td>Defrosting</td><td>○</td><td>○</td><td>○</td><td>○</td><td></td></tr><tr><td>Suction temperature thermistor</td><td>Control</td><td></td><td>○</td><td></td><td></td><td></td></tr><tr><td>Evaporation temperature thermistor</td><td>Control</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Gas pipe temperature thermistor</td><td>Control</td><td></td><td>○</td><td></td><td></td><td></td></tr><tr><td>High pressure switch</td><td>Protection</td><td>○</td><td></td><td>○</td><td></td><td>○</td></tr><tr><td>Low pressure switch (MXZ-32NV)</td><td>Protection</td><td>○</td><td>○</td><td></td><td></td><td>○</td></tr><tr><td>Fin temperature thermistor</td><td>Protection</td><td>○</td><td></td><td>○</td><td></td><td></td></tr><tr><td>Capacity code</td><td>Control</td><td>○</td><td>○</td><td>○</td><td></td><td></td></tr></table>	Sensor	Purpose	Actuator					Compressor	LEV	Outdoor fan motor	4 - way valve	2-way valve (MXZ-32NV)	Discharge temperature thermistor	Protection	○	○				Defrost thermistor	Defrosting	○	○	○	○		Suction temperature thermistor	Control		○				Evaporation temperature thermistor	Control						Gas pipe temperature thermistor	Control		○				High pressure switch	Protection	○		○		○	Low pressure switch (MXZ-32NV)	Protection	○	○			○	Fin temperature thermistor	Protection	○		○			Capacity code	Control	○	○	○		
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Fin temperature thermistor	Protection	○		○																																																																									
Capacity code	Control	○	○	○																																																																									

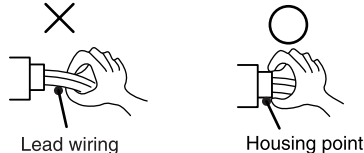
### 11.1 Cautions on troubleshooting

#### 11.1.1 Before troubleshooting, check the followings :

- 1) Check the power supply voltage.
- 2) Check the indoor / outdoor connecting wire for mis-wiring.

#### 11.1.2 Take care the followings during servicing.

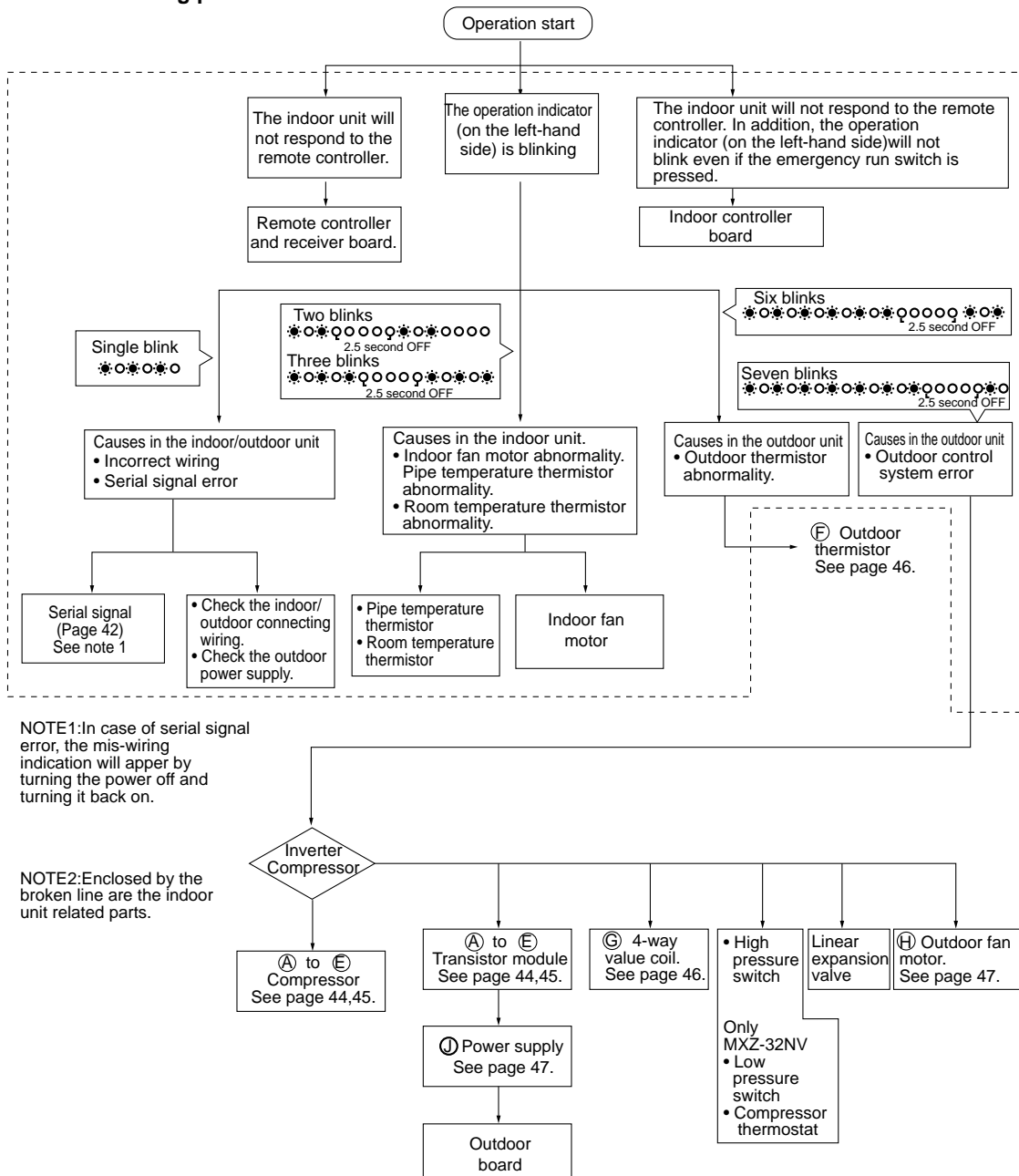
- 1) Before servicing the air conditioner, be sure to first turn off the remote controller to stop the main unit, and then after confirming the horizontal vane is closed, turn off the breaker.
- 2) When removing the P.C. board, hold the edge of the board with care NOT to apply stress on the components.
- 3) When connecting or disconnecting the connectors, hold the housing of the connector, DO NOT pull the lead wires.



#### 11.1.3 Troubleshooting procedure

- 1) First, check if the POWER LAMP on the indoor unit is flashing to indicate an abnormality. To make sure, check the abnormality indication for 2 or 3 times before starting service work.
- 2) If the P.C. board is supposed to be defective, check the copper foil pattern for disconnection and the components for bursting and discoloration.
- 3) When troubleshooting, refer to the flow chart and the check table .

#### 11-2 Troubleshooting procedure

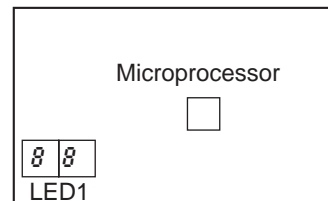


# (1) Troubleshooting table

Note 1. LED position is shown at right.

Note 2. LED indicates "00" in the normal status.

## <Outdoor control board>



7-segment LED display	Error mode
00	Normal

※ <MXZ-32NV> If there is defect in the following parts(electronic control P.C. board, relay P.C. board, high pressure switches(63H1,63H2),indoor /outdoor fan motor , or indoor coil thermistor), the compressor may stop even with the display remained at " 00 ".In any case, reset the breaker and check the above-stated parts.

Symptom	Outdoor unit does not operate.		
Display	Detecting method	Detecting method	Check points
<b>A4</b>	Outdoor power system abnormality	When the compressor operation has been interrupted by overcurrent protection continuously three times within 1 minute after start-up, the compressor stops operation.	<ul style="list-style-type: none"> <li>• Inverter output</li> <li>• Compressor</li> </ul>
<b>A1</b>	Outdoor refrigerant system abnormality (LEV abnormality)	When the compressor operation has been interrupted by LEV protection continuously five times, the compressor stops operation.	<ul style="list-style-type: none"> <li>• Amount of gas</li> <li>• Outdoor control P. C. board</li> <li>• Contact of LEV board connectors</li> </ul>
<b>A3</b>	Outdoor controller board abnormality	When the nonvolatile memory data cannot be read properly on the outdoor controller board	<ul style="list-style-type: none"> <li>• Outdoor control P.C. board</li> </ul>
<b>P3</b>	Compressor temperature abnormality	When the compressor has remained OFF for continuous thirty minutes by inner thermostat function	<ul style="list-style-type: none"> <li>• Outdoor air cycle</li> <li>• Amount of gas</li> <li>• Outdoor fan motor</li> <li>• Outdoor heat exchanger (dust adherence)</li> </ul>
<b>P1</b>	Indoor unit and LEV abnormality	When the drain abnormality is detected in the indoor unit and the indoor main coil temperature is too low, or when any abnormality is detected in the components of indoor unit	<ul style="list-style-type: none"> <li>• Check the abnormality indication on the indoor unit.</li> <li>• LEV</li> </ul>

Symptom	Outdoor unit stops and restarts every 3 minutes.		
Display	Detecting method	Detecting method	Check points
<b>E8</b>	Suction temperature thermistor abnormality	The compressor stops when a short or open circuit occurs in the suction temperature thermistor during compressor running.	<ul style="list-style-type: none"> <li>• Check the characteristic of the suction temperature thermistor. Refer to ㉔ on page 46.</li> <li>• Check the contact of P. C. board connectors.</li> </ul>
<b>E9</b>	Evaporation temperature thermistor abnormality	The compressor stops when a short or open circuit occurs in the evaporation temperature thermistor during compressor running.	<ul style="list-style-type: none"> <li>• Check the characteristic of the evaporation temperature thermistor. Refer to ㉔ on page 46.</li> <li>• Check the contact of P. C. board connectors.</li> </ul>
<b>E6</b>	Discharge temperature thermistor abnormality	The compressor stops when a short or open circuit occurs in the discharge temperature thermistor during compressor running.	<ul style="list-style-type: none"> <li>• Check the characteristic of the discharge temperature thermistor. Refer to ㉔ on page 46.</li> <li>• Check the contact of P. C. board connectors.</li> </ul>
<b>F8</b>	Fin temperature thermistor abnormality	The compressor stops when a short or open circuit occurs in the fin temperature thermistor during compressor running.	<ul style="list-style-type: none"> <li>• Check the characteristic of the fin temperature thermistor. Refer to ㉔ on page 46.</li> <li>• Check the contact of P.C. board connectors.</li> </ul>
<b>A8</b>	Overcurrent protection	When 40 A or more current is applied to the power module, the compressor stops and restarts in 3 minutes.	<ul style="list-style-type: none"> <li>• Check the inverter and compressor. Refer to ㉔ to ㉔ on page 44,45.</li> <li>• Check the amount of gas.</li> <li>• Check the indoor/outdoor air flow for short cycle.</li> <li>• Check the indoor unit air filter for clogging</li> </ul>
<b>d6</b>	Discharge temperature overheat protection	When the discharge temperature thermistor detects 120°C or above, the compressor stops and restarts operation in 3 minutes. ((Protection will be released at 80°C or below.)	<ul style="list-style-type: none"> <li>• Check the amount of gas and the refrigerant cycle.</li> <li>• Check the outdoor unit air passage.</li> </ul>
<b>d4</b>	Fin temperature overheat protection	When the fin temperature thermistor detects 88°C or above, the compressor stops and restarts operation in 3 minutes.	<ul style="list-style-type: none"> <li>• Check the outdoor unit air passage.</li> <li>• Check the power module.</li> <li>• Check the outdoor fan motor. Refer to ㉔ on page 47.</li> </ul>





<b>d2</b>	Low pressure switch protection	When the low pressure has been 0.05Mpa(0.5 kgf/cm <sup>2</sup> -G) for 5 minutes or more, the compressor stops and restarts in 3 minutes.	<ul style="list-style-type: none"> <li>• Check the ball valve.</li> <li>• Check the pipes for bending or clogging</li> <li>• Check the LEV operation.</li> <li>• Replace the outdoor controller board.</li> </ul>
<b>d1</b>	Low discharge temperature protection	When the discharge temperature has been 35°C or below for 50 minutes or more, the compressor stops and restarts operation in 3 minutes.	<ul style="list-style-type: none"> <li>• Check the amount of gas.</li> <li>• Replace the outdoor controller board.</li> <li>• Check the contact of LEV board connectors.</li> </ul>
<b>p4</b>	Compressor stop by thermostat function	When the compressor inner thermostat detects 130°C or above, the compressor stops and restarts operation in 3 minutes.	<ul style="list-style-type: none"> <li>• Check the inverter output. Refer to ㉔ to ㉕.</li> <li>• Check the compressor.</li> <li>• Check the amount of gas.</li> <li>• Check the indoor unit air filter for clogging.</li> <li>• Check the indoor/outdoor air flow for short cycle.</li> </ul>

Symptom	Outdoor unit operates. (The compressor operates at reduced frequency.)		
Display	Detecting method	Detecting method	Check points
<b>d8</b>	Frequency drop by current protection	When the outdoor unit input current exceeds 22.5 A, the compressor operates at reduced frequency.	These symptoms do not mean any abnormality of the product, but check the following points. <ul style="list-style-type: none"> <li>• Air filter clogging</li> <li>• Amount of gas</li> <li>• Short cycle of indoor/outdoor air flow</li> </ul>
<b>d9</b>	Frequency drop by overload protection	When the compressor load exceeds the specified value, the compressor operates at reduced frequency.	
<b>d7</b>	Frequency drop by high pressure protection	When indoor pipe temperature exceeds 55°C during heating, the compressor operates at reduced frequency.	
	Frequency drop by defrosting in cooling	When the indoor pipe temperature falls to 6°C or below during cooling, the compressor operates at reduced frequency.	
<b>d6</b>	Frequency drop by discharge temperature protection	When the discharge temperature exceeds 115°C, the compressor operates at reduced frequency.	<ul style="list-style-type: none"> <li>• Amount of gas</li> <li>• Outdoor unit air passage</li> </ul>
<b>d3</b>	Frequency drop by high pressure switch protection	When the high pressure exceeds 2.75MPa (28 kgf/cm <sup>2</sup> -G), the compressor operates at reduced frequency. In addition, the two-way valve reverses and the fan speed changes.	
<b>d2</b>	Frequency drop by low pressure switch protection	When the low pressure falls to 0.05Mpa or below, the compressor operates at reduced frequency. In addition, the two-way valve opens.	

Symptom	Outdoor unit operates.		
Display	Detecting method	Detecting method	Check points
<b>E1</b>	Defrost thermistor abnormality	When a short or open circuit occurs in the defrost thermistor during heating * In this case, the compressor continues to operate.	<ul style="list-style-type: none"> <li>• Defrost thermistor characteristic</li> <li>• Contact of P. C. board connectors</li> </ul>
<b>F5</b>	Room-A pipe temperature thermistor abnormality	When a short or open circuit occurs in the Room-A pipe temperature thermistor * In this case, the compressor keeps running.	<ul style="list-style-type: none"> <li>• Room A pipe temperature thermistor characteristic</li> <li>• Contact of P.C. board connectors</li> </ul>
<b>F6</b>	Room-B pipe temperature thermistor abnormality	When a short or open circuit occurs in the Room-B pipe temperature thermistor * In this case, the compressor keeps running.	<ul style="list-style-type: none"> <li>• Room B pipe temperature thermistor characteristic</li> <li>• Contact of P.C. board connectors</li> </ul>
<b>F7</b>	Room-C pipe temperature thermistor abnormality	When a short or open circuit occurs in the Room-C pipe temperature thermistor * In this case, the compressor keeps running.	<ul style="list-style-type: none"> <li>• Room C pipe temperature thermistor characteristic</li> <li>• Contact of P.C. board connectors</li> </ul>
<b>P9</b>	Room-D pipe temperature thermistor abnormality	When a short or open circuit occurs in the Room-D pipe temperature thermistor * In this case, the compressor keeps running.	<ul style="list-style-type: none"> <li>• Room D pipe temperature thermistor characteristic</li> <li>• Contact of P.C. board connectors</li> </ul>
<b>H4</b>	Power factor detection abnormality	When the compressor power factor cannot be detected * In this case, the compressor keeps running.	<ul style="list-style-type: none"> <li>• Compressor wiring</li> </ul>
<b>P2</b>	Shell temperature overheat protection	When the discharge temperature rises to 95°C or above in single-unit cooling operation, the outdoor fan speed changes.	<ul style="list-style-type: none"> <li>• Outdoor unit air passage</li> <li>• Pipe length</li> </ul>
<b>H6</b>	Dry protection	When five degrees or more of temperature difference have been detected between the indoor main temperature and the auxiliary pipe temperature for 10 minutes, the target discharge temperature is reduced.	This symptom does not mean any abnormality in the product, but check the followings. <ul style="list-style-type: none"> <li>• Amount of gas</li> <li>• Pipe length</li> </ul>

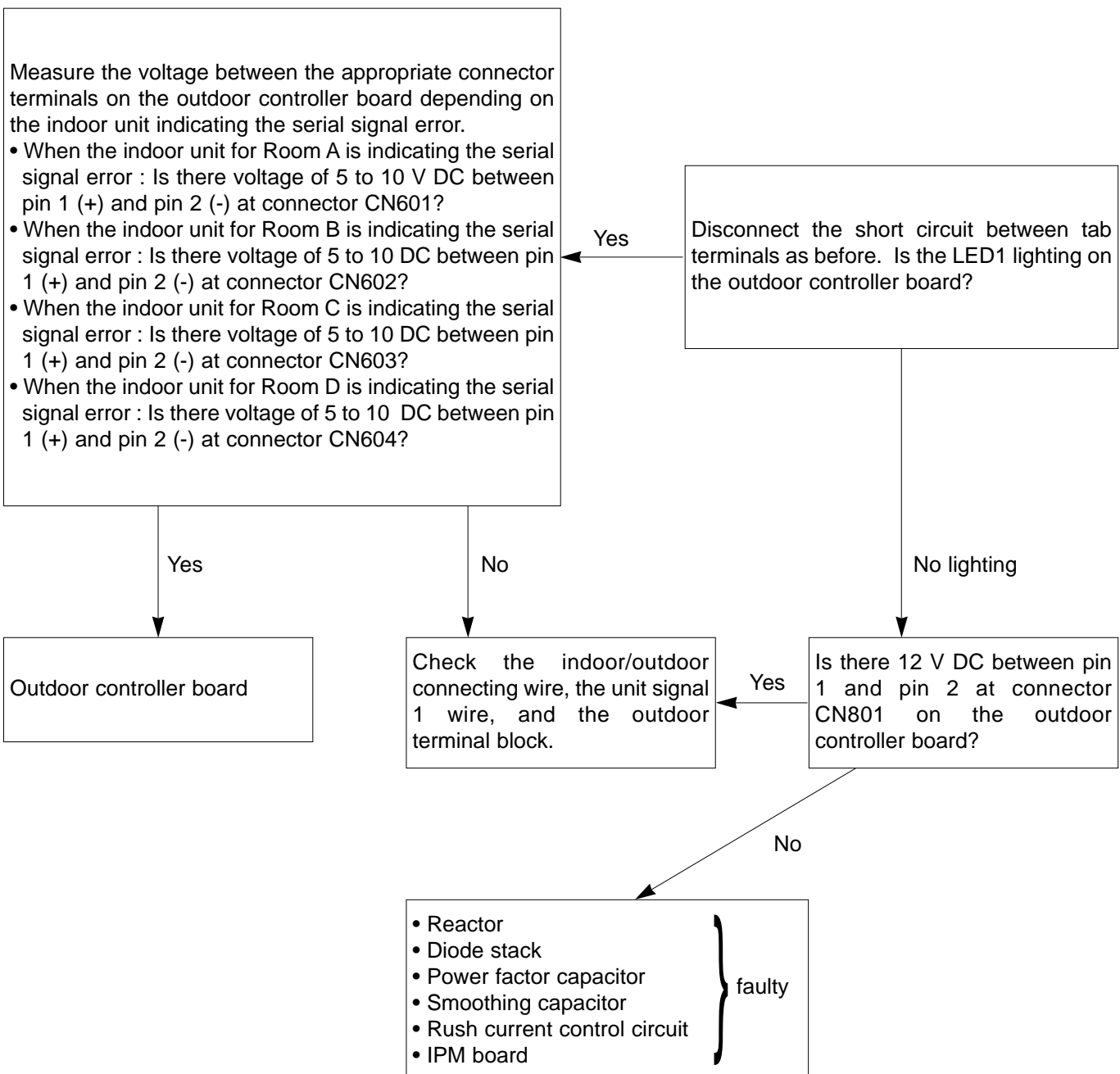
(2) Checking the mis-wiring and serial signal error (Only MXZ-32NV)

<The outdoor unit does not operate.>

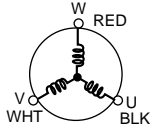
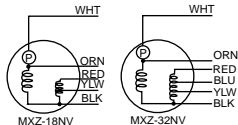
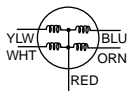
Single or repeated blinks appears on the operation indicator (on the left-hand side).

- ✱ Using the light emitting diode LED1 on the indoor controller board (See the indoor unit service manual) , locate the defect in the following procedure.

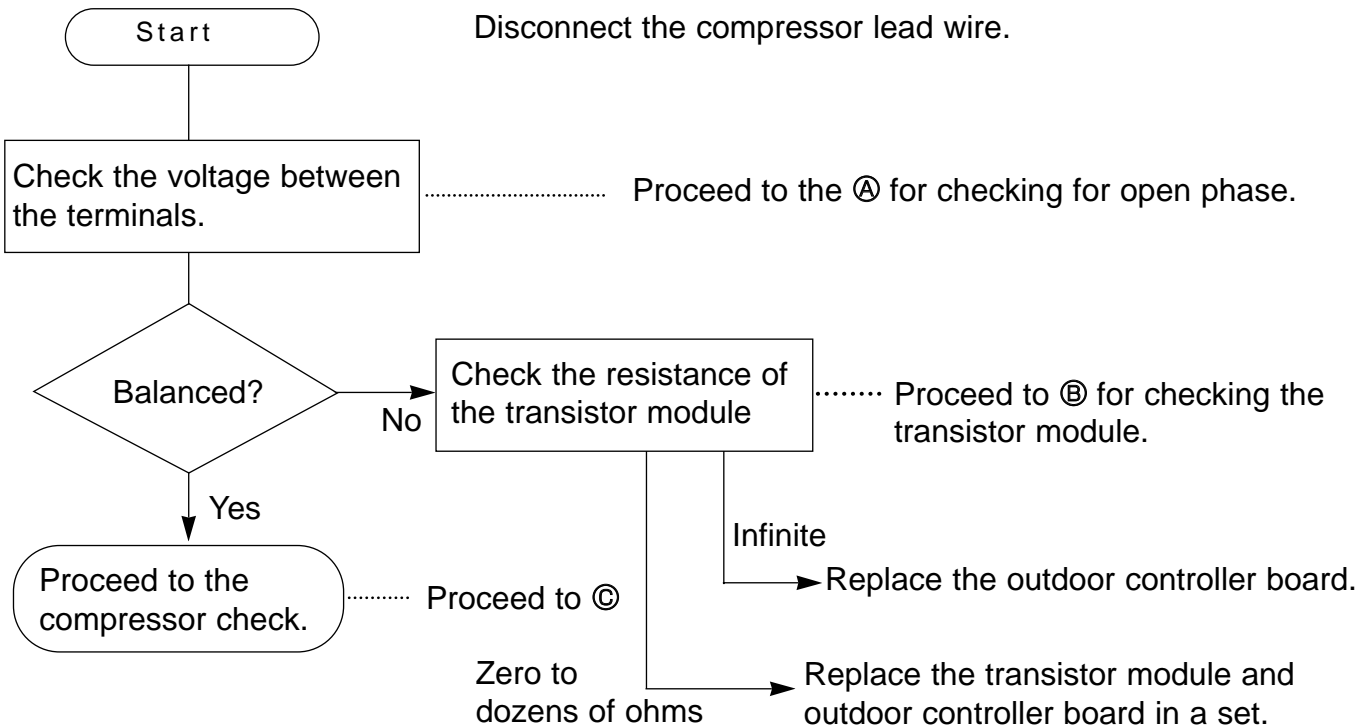
After checking the indoor unit, check the outdoor unit as follows. For the indoor unit inspection, refer to the appropriate service manual.



### (3) Troubleshooting the components (Simple check method for main components)

Part name	Check method and criterion				
Defrost thermistor Suction / Evaporation / Gas pipe temperature thermistor	Measure the resistance using a tester. (Part temperature -10°C ~ 40°C)				
	Normal		abnormal		
	5kΩ ~ 55kΩ		Opened or short-circuited		
Discharge temperature thermistor	Measure the resistance using a tester, after warming up the thermistor by holding by hand. (Part temperature : 20°C ~40°C)				
	Normal		abnormal		
	100kΩ ~ 250kΩ		Opened or short-circuited		
Compressor	Measure the resistance between terminals using a tester. (Winding temperature : -10°C ~ 40°C)				
	Normal			abnormal	
	MXZ-18NV		MXZ-32NV		Opened or short-circuited
	Each phase 1.05Ω ~ 1.29Ω		Each phase 0.47Ω ~ 0.58Ω		
Outdoor fan motor	Measure the resistance between lead wires using a tester. (Part temperature : -10°C ~ 40°C)				
	Normal			abnormal	
	WHT - BLK	MXZ-18NV	MXZ-32NV	Opened or short-circuited (Not including WHT - ORN)	
	WHT - BLK	143.0Ω ~ 176.0Ω	69.0Ω ~ 86.0Ω		
	BLK - YLW	63.0Ω ~ 78.0Ω	23.0Ω ~ 30.0Ω		
	YLW - BLU	-	10.0Ω ~ 13.0Ω		
	RED - BLK	-	73.0Ω ~ 91.0Ω		
	YLW - RED	31.0Ω ~ 39.0Ω	-		
Reversing valve coil	Measure the resistance using a tester. (Part temperature -10°C ~ 40°C)				
	Normal			abnormal	
	MXZ-18NV		MXZ-32NV		Opened or short-circuited
	1320Ω ~ 1620Ω		1190Ω ~ 1715Ω		
<Only MXZ-32NV> Solenoid coil	Measure the resistance using a tester. (Part temperature -10°C ~ 40°C)				
	Normal		abnormal		
	873Ω ~ 1068Ω		Opened or short-circuited		
Linear expansion valve	Measure the resistance using a tester.(Part temperature -10°C ~ 40°C)				
	Lead wire color	Normal		Abnormal	
		MXZ-18NV	MXZ-32NV	Opened or short-circuited	
	WHT - RED	22 ~ 29Ω	21 ~ 26Ω		
	RED - ORN				
	YLW - RED				
	RED - BLU				
High pressure switch (HPS) Low pressure switch (LPS) Compressor thermistor ※ Only MXZ-32NV	Pressure (HPS, LPS)		Inner thermistor	Normal	abnormal
	Operation OFF		Operation OFF	Short	Other than those listed at left
	HPS1	2.35 ± 0.15MPa (24 ± 1.5kg / cm <sup>2</sup> )	108 ± 11°C		
	※ HPS2	2.55 ± 0.2MPa (26 ± 2kg / cm <sup>2</sup> )			
	※ LPS	0.15 ± 0.05MPa (1.5 ± 0.5kg / cm <sup>2</sup> )			
	HPS1	2.75 <sup>+0.95</sup> <sub>-0.95</sub> MPa (28 <sup>+9.8</sup> <sub>-9.8</sub> kg / cm <sup>2</sup> )	130 ± 5°C	Open	
	※ HPS2	3.43 <sup>+0.95</sup> <sub>-0.95</sub> MPa (35 <sup>+9.8</sup> <sub>-9.8</sub> kg / cm <sup>2</sup> )			
	※ LPS	0.05 ± 0.04MPa (0.5 ± 0.4kg / cm <sup>2</sup> )			

(Simple check methods for inverter / compressor)



**A Checking for open phase**

Be sure to use the analog tester for measurement.

• With the lead wire disconnected, activate the inverter and check the balance of voltage between terminals.

Operation mode	Operational frequency (Hz)	Output voltage (V)
COOL	58	110
HEAT	40	70

**<Operation method>**

Perform the test run in the heating mode by using the emergency run switch on the indoor unit.

**<Measure point>**

Measure the AC voltages at the following three points on the transistor module

- BLK - WHT
- BLK - RED
- WHT - RED

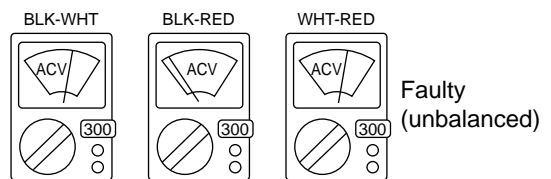
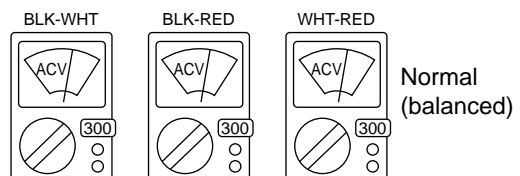
**<Judgment>**

Balanced : Normal

Unbalanced : Faulty (Open phase)

Shut off by overcurrent : Faulty (Short)

**Tester indication**



NOTE 1 : After the outdoor fan starts running, wait for one minute or more before measuring the voltages.

NOTE 2 : The output voltage values in the above table have the tolerance of  $\pm 20\%$ .

**B Checking the resistance of transistor module**

• Disconnect the lead wires and check the resistance of terminals at the transistor module.

**<Measure points>**

Measure the AC voltage at the following six points on the transistor module.

BLK - WHT, WHT - BLK

BLK - RED, RED - BLK

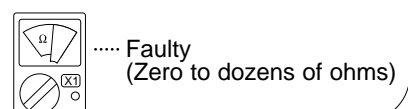
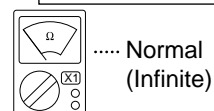
WHT - RED, RED - WHT

**<Judgment>**

Infinite ( $\Omega$ ) : Normal

Zero to dozens ( $\Omega$ ) : Faulty (Short)

**Tester indication**



### C Checking the compressor

Check the resistance of compressor

..... Proceed to ④ for checking the compressor winding.

Between one and dozens of ohms?

No

Compressor short / open circuit



Replace the compressor.

Yes

Check the operation time

..... Proceed to ⑤ for checking the compressor operation.

Continuous operation?

No

Compressor layer-short or lock. Refrigerant circuit defective.



Replace the compressor.  
Check the refrigerant circuit.

Yes

Normal

### D Checking the compressor winding

Disconnect the lead wires and check the resistance between the compressor terminals.

#### <Measuring points>

Measure the AC voltages at the following three points on the transistor module.

BLK - WHT

BLK - RED

WHT - RED

#### <Judgment>

1.05 ~ 1.29Ω (MXZ-18NV), 0.47 ~ 0.58Ω (MXZ-32NV) at -10 °C ~ 40 °C of winding temperature.

Zero (Ω) : Faulty (Short)

Infinite (Ω) : Faulty (Open)

NOTE 1 : Be sure to zero the tester before measurement.

NOTE 2 : The winding resistance is 1.2Ω(MXZ-18NV), 0.54Ω(MXZ-32NV) at 20°C for each phase.

#### Tester indication



..... Normal  
(One to dozens of ohms)



..... Faulty  
(Zero ohms or short)



..... Faulty  
(Infinite or open)

### E Checking the compressor operation

• Connect the compressor, activate the inverter, and count time until the inverter stops due to overcurrent.

#### <Operating method>

Perform the test run in the cooling or heating mode by using the emergency run switch on the indoor unit.

#### <Measuring point>

Count time from when the outdoor fan starts up until the inverter stops due to overcurrent.

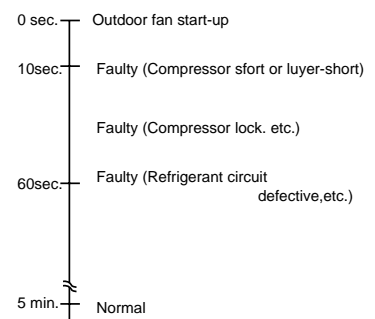
#### <Judgment>

Inverter stops in 0 to 10 seconds : Faulty (Short)

Inverter stops in 10 to 60 seconds : Faulty (Compressor lock)

Inverter stops in 60 seconds to 5 minutes : Faulty (Refrigerant circuit defective)

Inverter operates for 5 minutes or more : Normal



(Simple check method for main components)

## F Checking the outdoor thermistors

### Outdoor thermistor abnormality

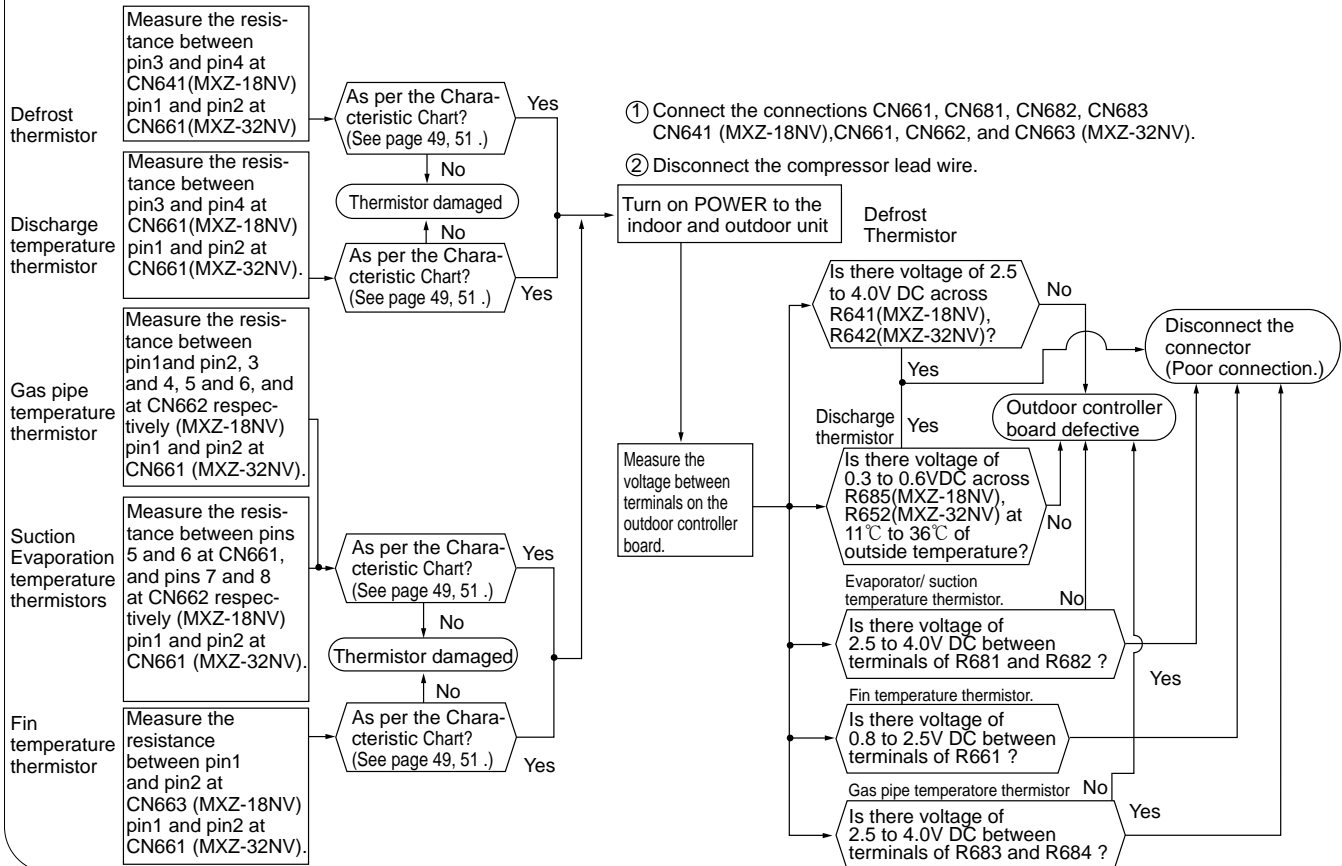
#### MXZ-18NV

Disconnect the connectors CN641, CN661 and CN681, CN682, CN683 from the outdoor controller.

#### MXZ-32NV

Disconnect the connectors CN661, CN662 and CN663 from the outdoor controller.

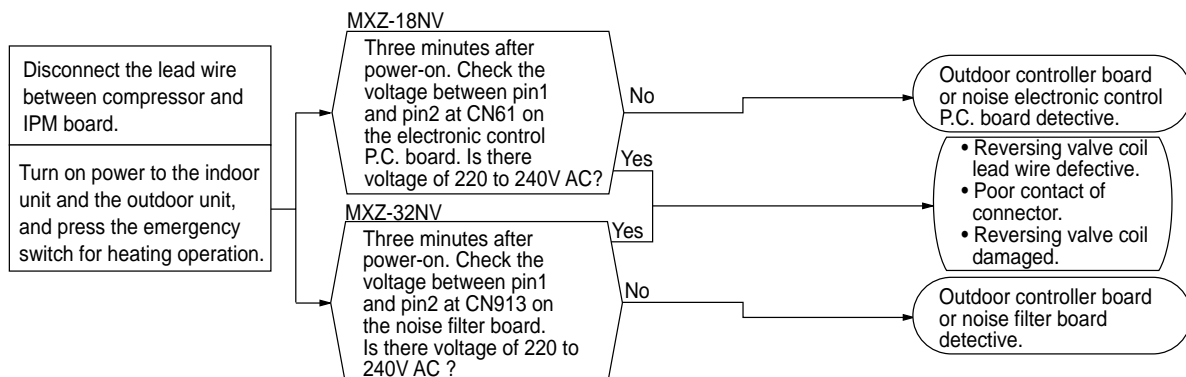
(Check the characteristic of thermistors.)



## G Checking the reversing valve coil

Cooling operation works when heating is expected.

- First, measure the resistance of the reversing valve coil to check the integrity.
- If connector CN61 (MXZ-18NV), CN913 (MXZ-32NV) is not connected or the reversing valve coil is open, voltage occurs between terminals even when the control is OFF.



## H Checking the outdoor fan motor

The outdoor fan motor remains stopped.

- First, measure the resistance of the 4-way valve coil to check the integrity.

<MXZ-18NV>  
Disconnect CN63 TAB91 and outdoor electronic control P.C.board.  
Disconnect the connector between the compressor and the transistor module.  
<MXZ-32NV>  
Disconnect the relay connector. Disconnect the connector (lead wire) between the compressor and the IPM board.

Turn on power to the indoor unit and the outdoor unit, the press the emergency switch for cooling or heating operation.  
Three minutes after power-on, check the voltage between terminals at the relay connector.

No  
<MXZ-18NV>  
Is there voltage of 220 - 240V AC between CN63 ② and ③ or ② and ⑤?  
<MXZ-32NV>  
Is there voltage of 220 - 240V AC between pin2 and any of pin③, ④, ⑤, and ⑥?

Outdoor control board or outdoor relay board defective

- Outdoor fan motor lead wire defective.
- Poor contact for connector
- Outdoor fan motor damaged.

## I Checking the solenoid coil (Only MXZ-32NV)

Poor heating/cooling. The compressor stops frequently.

- First measure the resistance of the reversing valve coil to check the integrity.
- If connector CN913 is not connected or the solenoid coil is open, voltage occurs between terminals even when the control is OFF.

Disconnect the lead wire between compressor and IPM board.

Turn on power to the indoor unit and the outdoor unit, and press the emergency switch for heating operation.

Three minutes after power-on, check the voltage between pin3 and pin4 or CN913 on the noise filter board.  
Is there voltage of 220 to 240V AC?

No  
Yes

Outdoor control board or outdoor relay board defective.

- Solenoid coil lead wire defective.
- Poor contact of connector
- Solenoid coil damaged.

(Checking the power supply)

## J Checking the power supply

The inverter does not operate.

Turn on power to the outdoor unit.

Is there voltage of 220 to 240V AC the power terminal block?

Check the powerline

Is there voltage of 310 to 340V AC across the the smoothing capacitor?

Activate the indoor unit emergency operation.

Three minutes later does the serial signal error occur?

Refer to the serial signal check method.

No  
Main electric parts defective in the circuit.

Outdoor or indoor controller board defective.

## K Checking the rush current control circuit

The outdoor unit does not operate at all or stops in short time due to over current.

Is the current limiting resistor disconnected? (It has 10Ω, if normal.)

Replace the current limiting resistor.

No  
Turn on power to the outdoor unit.

Does LED light up?

Is the rush current limiting relay functioning properly? (It should close one second after the outdoor unit power-on, if normal.)

Outdoor controller board or rush current limiting resistor defective.

No  
Main components in the circuit or outdoor controller board defective.

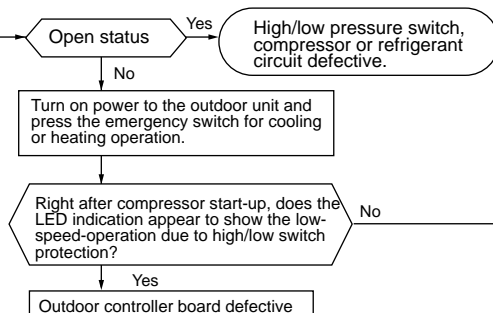
Yes  
Other main components in the circuit or compressor defective.

- Check other main circuit parts at the same time when you replace the current limiting resistor.

## L High/low pressure switch and compressor thermostat circuits

No heating/cooling

- Three minutes after the unit stops, check that the high and low pressure switch open and close properly.
- After the unit stops, remove the sound-proof material around the compressor.
- 60 minutes after that, check that the compressor thermostat opens and closes properly.



Causes	HPS	LPS	Compressor thermostat
Gas undercharged		○	○
Gas overcharged	○		
Liner expansion valve	○	○	○
Ball valve		○	
Indoor air filter clogged	○	○	
Pipe length too long		○	○
Short cycle of outdoor air flow	○		
Outdoor heat exchanger (dust adherence)	○	○	

## M Checking the liner expansion valve (LEV)

The outdoor control system stops due to abnormality.

<MXZ-18NV>

Turn OFF the power supply and make sure that LEDs on outdoor electronic control P.C. board turn OFF. Then turn ON power supply.

LEV operates for the first 30 seconds after power supply is turned ON. While LEV is operating, check that there is 12V DC pulse amplitude between both ends of LEV diode. Repeat this for 4 diodes each in unit A and B.  
 •When no pulse amplitude, the outdoor electronic control P.C. board is defective.  
 •When checking, LEV connectors must be connected.

<MXZ-32NV>

Turn off the breaker and short-circuit pin1 and pin3 at CN605 on the outdoor control board.

CN605  
Short-circuit

Turn on the breaker and operate the air conditioner with the remote controller.

About 10 seconds after start-up, does LEV click?

Yes

Normal

No

Disconnect the LEV relay connector and check the voltage at the following points between terminals on the controller board side. Does the voltage fluctuate between 7.5 and 8.5V DC at any points?

Yes

LEV defective

No

Outdoor controller board defective

(+) (-)  
Measuring point  
•RED-WHT  
•RED-BLU  
•RED-ORN  
•RED-YLW

## N Mis-wiring or mis-piping

Incorrect connection of indoor units results in no cooling/heating. In the all unit operation, however, the system seems to operate normally even if wires or pipes are connected incorrectly.

Therefore, use the single-unit operation, not the all-unit operation, to check mis-wiring or mis-piping.

<Check of mis-wiring or mis-piping>

The following symptoms appear if wires or pipes are wrongly connected.

In the single-unit operation in HEAT mode, the compressor stops due to high pressure protection or it operates at the lowest frequency at the normal working temperature, causing no heating.

In the single-unit operation in COOL mode, the indoor unit blows out air but it is not cooling, causing no cooling. The heat exchanger freezes in non-operating unit(s).

### <EFFECT>

In the heating operation, the compressor stops and restarts operation too frequently due to high pressure protection, and finally gets damaged.

In the cooling operation, the compressor operates with liquid back, and finally gets damaged.

## O The other cases

① In the case that the indoor fan and outdoor fan operate but the compressor does not operate, it causes that the high pressure switch can be operated once.

First of all, check the high pressure switch can be shorted, turn OFF the power and turn ON again 1 minute later.

② Indoor unit does not operate. (different modes)

- When you try to run two indoor units simultaneously, one for cooling and the other for heating, the unit which transmits signal to the outdoor units earlier decides the operation mode. The other unit indicates as shown in the figure below.
- When the above situation occurs, set all the indoor units to the same mode, turn OFF the indoor units, and then turn them back ON.
- Though the top of the indoor unit sometimes gets warm, this does not mean malfunction. The reason is that the refrigerant gas continuously flows into the indoor unit even while it is not operating.

OPERATION INDICATOR



Lighting

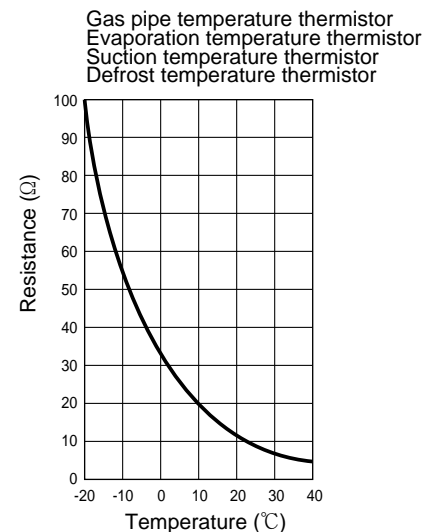
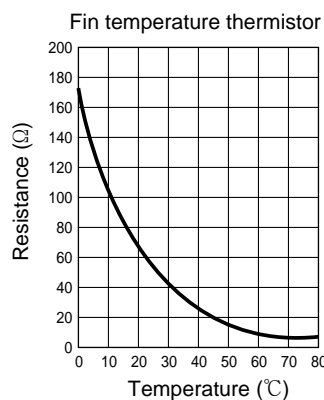
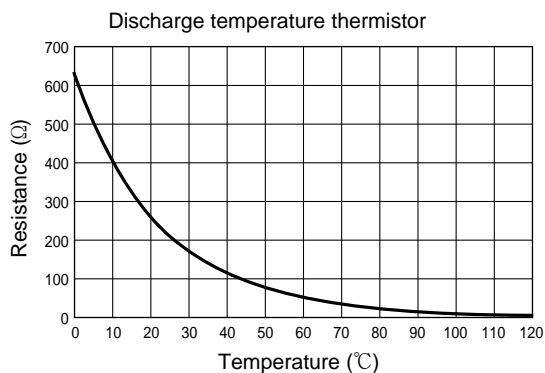
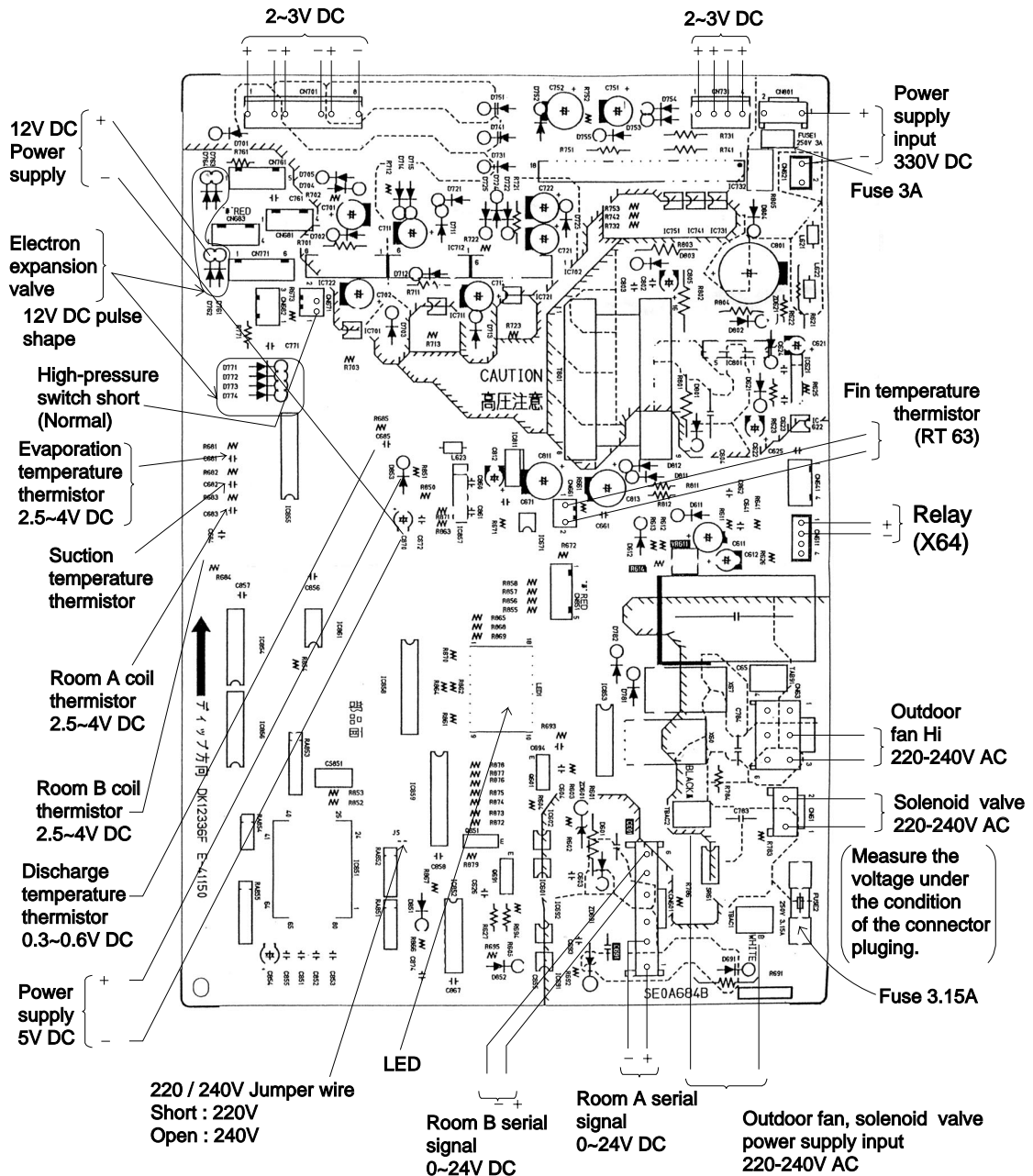


Flashing



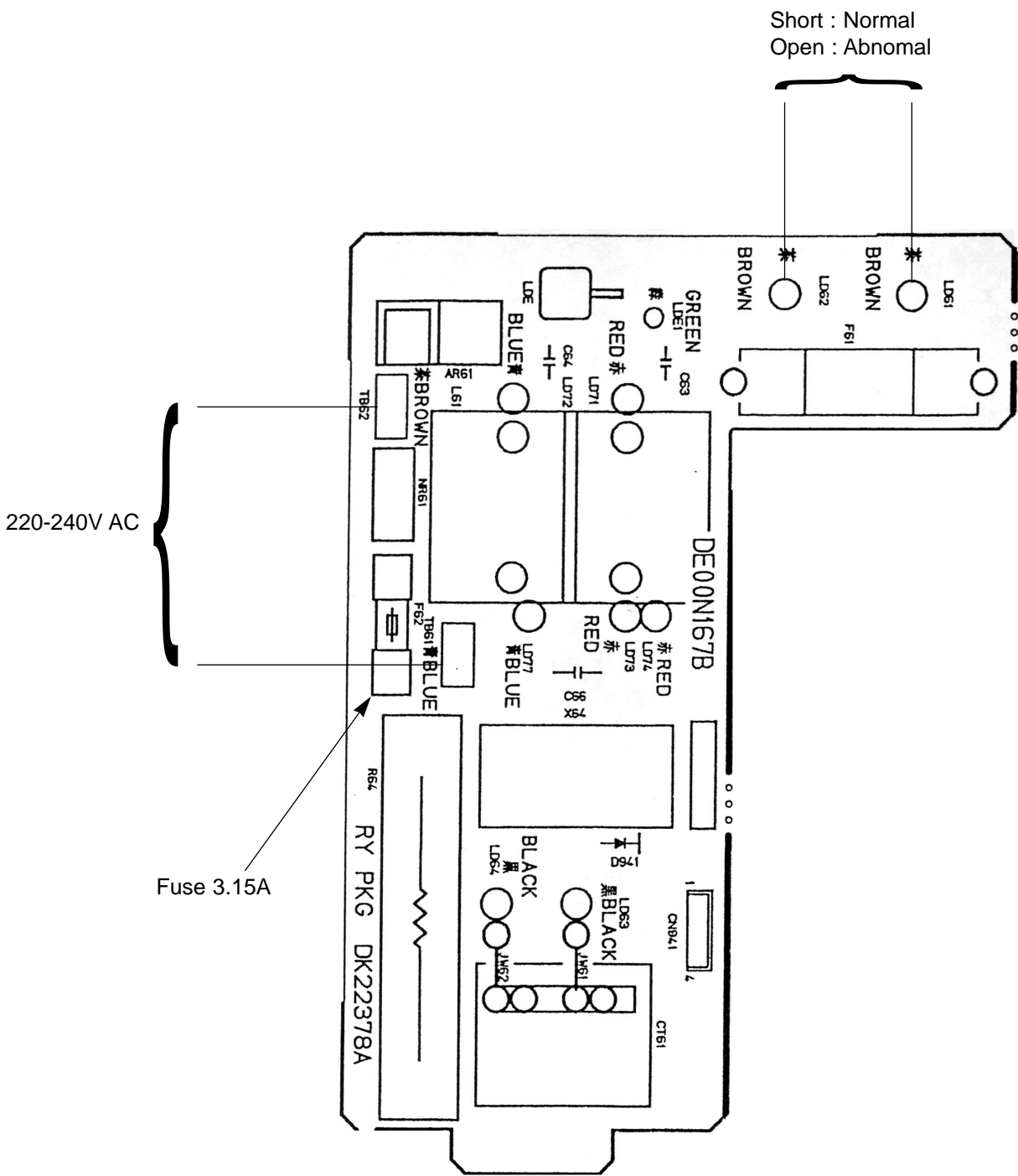
# MXZ-18NV -[E1] MXZ-18NV -[E2]

## Outdoor unit electronic control P.C. board





MXZ-18NV -E1 MXZ-18NV -E2  
Relay P.C. board



## TEST POINT DIAGRAM AND VOLTAGE

MXZ-32NV - [E1] MXZ-32NV - [E2]

Electronic control P.C.board

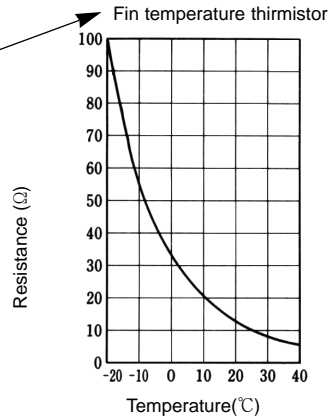
Defrost temperature thermistor  
2.5~4.0V DC

Suction temperature thermistor  
0.3~0.6V DC

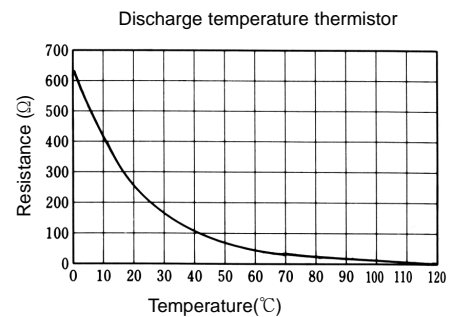
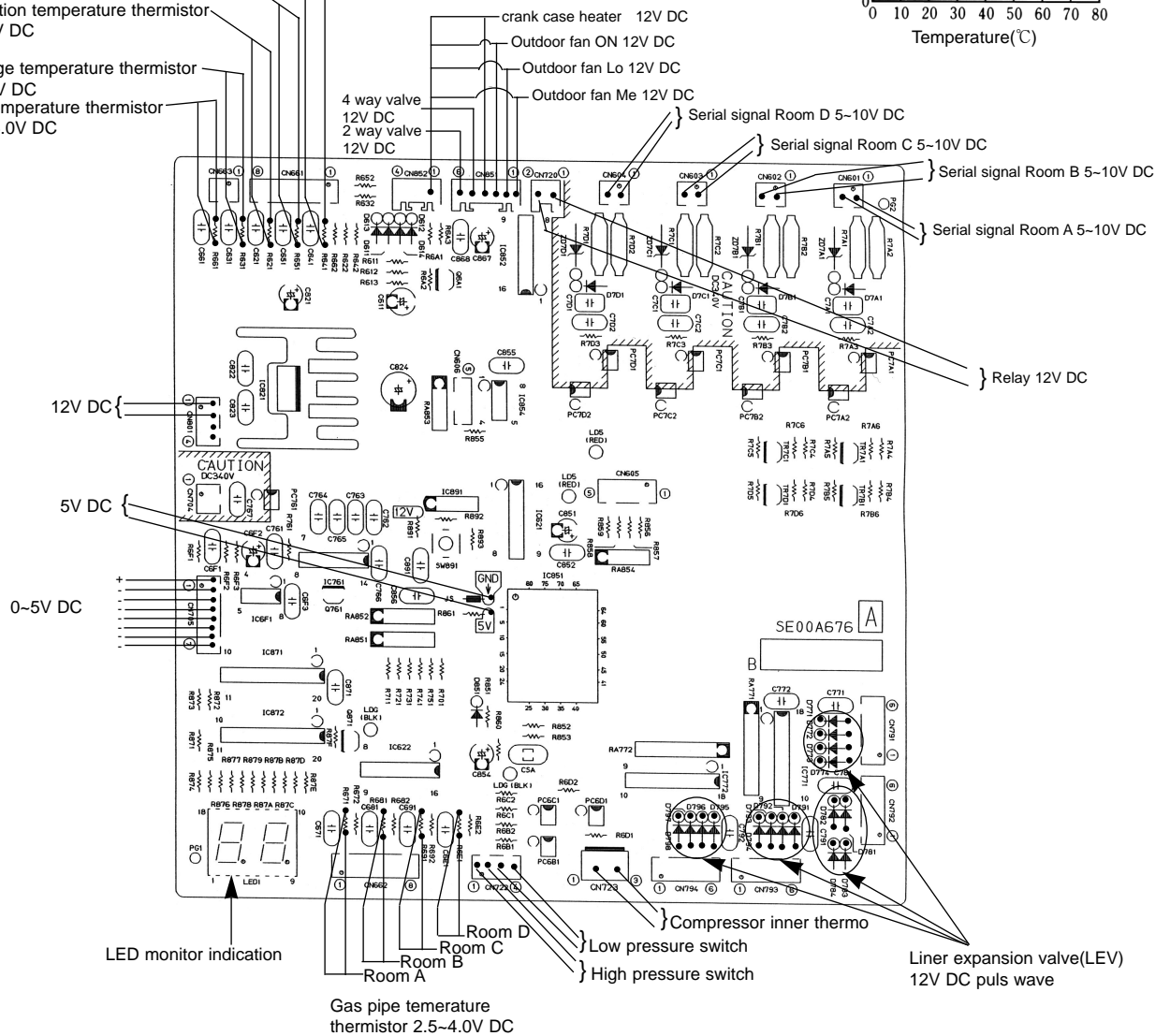
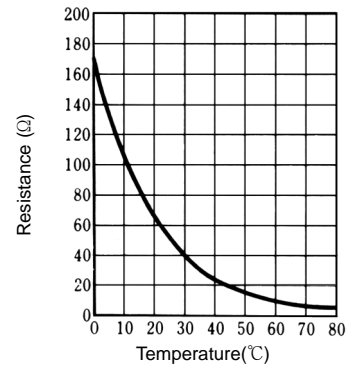
Evaporation temperature thermistor  
2.5~4.0V DC

Discharge temperature thermistor  
2.5~4.0V DC

Fin temperature thermistor  
1.0~4.0V DC



Gas pipe temperature thirnistor  
Evaporation temperature thirnistor  
Suction temperature thirnistor  
Defrost temperature thirnistor



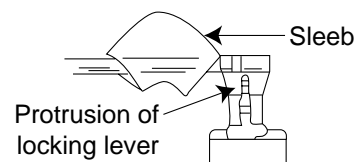


## 11-2 OUTDOOR UNIT

MXZ-18NV - E1 MXZ-18NV - E2

## NOTE:

※ on the wiring diagram shows the terminals with a lock mechanism, so it cannot be removed when you pull the lead wire be sure to pull the wire by pushing the locking lever (projected part) of the terminal with a finger.



## OPERATING PROCEDURE

## Removing the compressor

- (1) Remove the top panel.
  - (2) Remove the service panel and release the gas.
  - (3) Remove the rear panel, and front panel.
  - (4) Disconnect the compressor linking connector. (See Photo 2.)
  - (5) Disconnect the following connectors from the outdoor electronic control P.C. board. CN61, CN63, TAB91, CN641, CN671, CN681, CN682, CN761, CN771, CN661, CN683.
  - (6) Disconnect the reactor lead wires from the terminal +++ of the diode stack (DS63) and from the terminal +++ of the capacitor (C67). (See Photo 3.)
- Note: When pulling the wire, push the locking lever of the terminal.
- (7) Remove the inverter assembly.
  - (8) Remove the band that fixes the discharge pipe muffler. (See Photo 4.)
  - (9) Remove the propeller fan.
  - (10) Remove the separator and support.
  - (11) Remove the reactor.
  - (12) Remove the terminal cover to disconnect the lead wires from the compressor terminals.
  - (13) Detach the welded section of the compressor suction pipe and discharge pipe. (See Photo 4.)
  - (14) Remove the compressor nuts to remove the compressor.

## PHOTOS

Photo 1

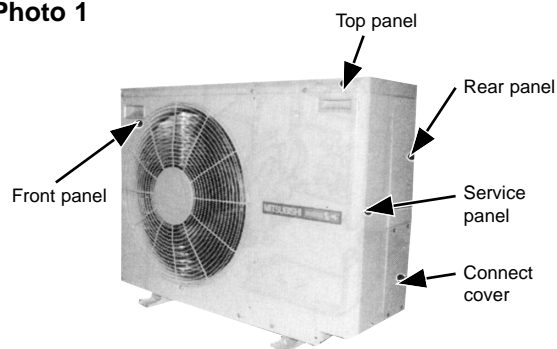


Photo 2

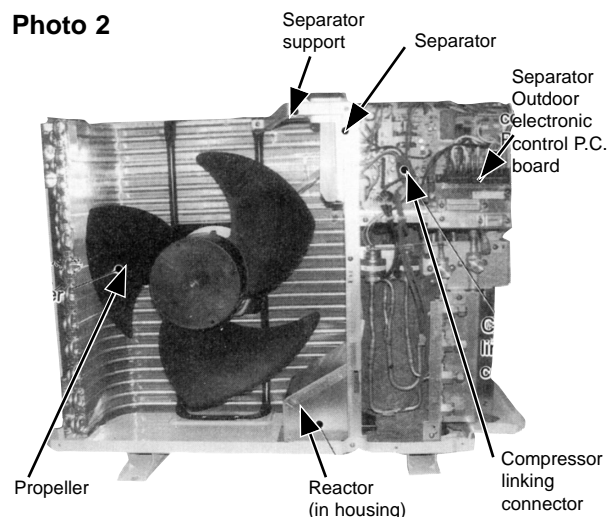
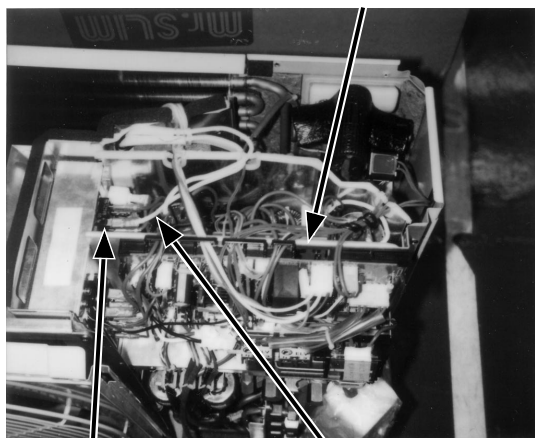


Photo 3

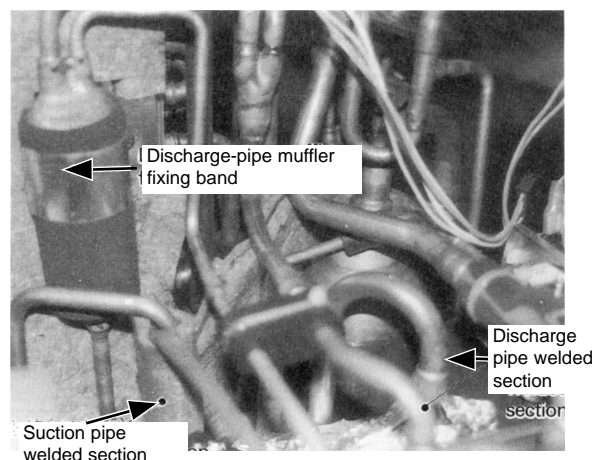
Outdoor electric control P.C. board



Terminal ⊕ for diode stack (DS 67)

Terminal ⊕ for capacity (C 67)

Photo 4



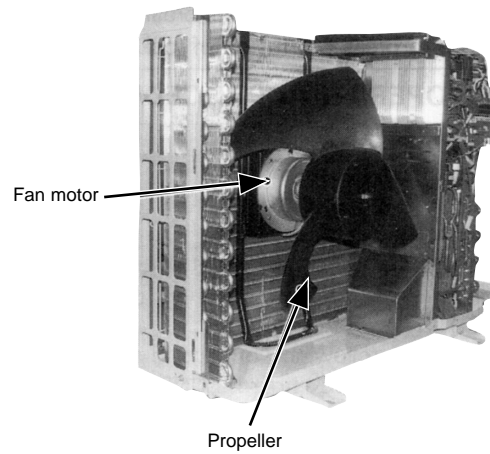
## OPERATING PROCEDURE

### Removing the outdoor fan motor

- (1) Remove the top panel, service panel, and front panel.
- (2) Disconnect the connector CN63, TAB91 from the outdoor electronic control P.C. board.
- (3) Remove the propeller.
- (4) Remove the outdoor fan motor.

## PHOTOS

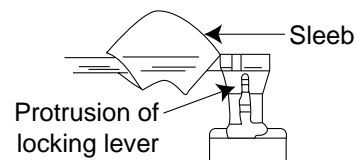
Photo 4

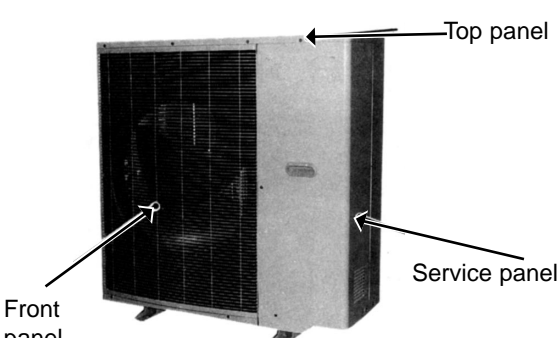
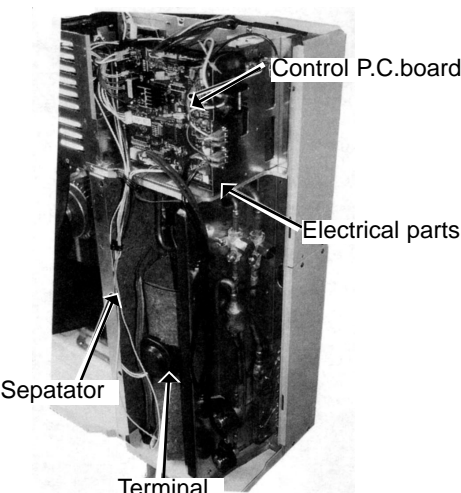
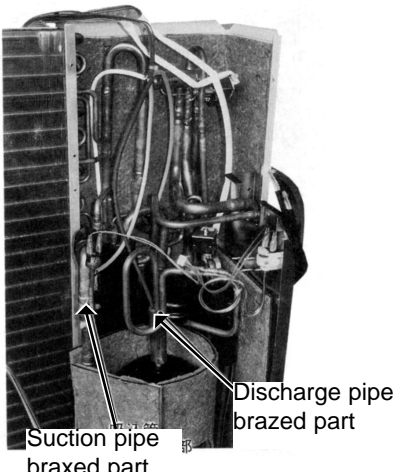


## MXZ-32NV -<sup>[E1]</sup> MXZ-32NV -<sup>[E2]</sup>

### NOTE:

✿ on the wiring diagram shows the terminals with a lock mechanism, so it cannot be removed when you pull the lead wire be sure to pull the wire by pushing the locking lever (projected part) of the terminal with a finger.



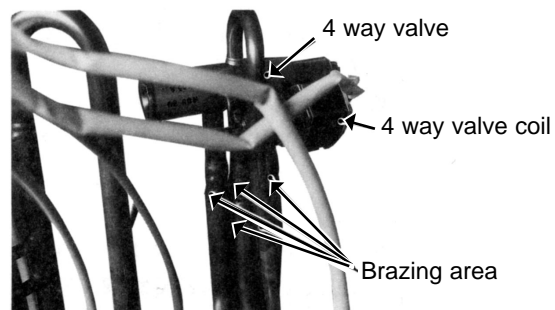
OPERATING PROCEDURE	PHOTOS
<p><b>1.Removing the compressor</b></p> <ol style="list-style-type: none"> <li>(1)Remove the screws fo the service panel, and remove it. Release refrigerant gas.</li> <li>(2)Remove the screws of the top panel , and remove it.</li> <li>(3)Remove the screws of the front panel , and remove it.</li> <li>(4)Disconnect the compressor lead wire.(TAB64,TAB65,TAB66)</li> <li>(5)Disconnect the ourdoor controller board connectors CN791, CN792, CN723, CN722,CN662, and CN661.Disconnect the noise filter board connectors CN913, CN912, and CN911.</li> <li>(6)Remove the four screws of the electrical parts , and remove them.</li> <li>(7)Remove the propeller.</li> <li>(8)Remove the screws of the separator, and remove it.</li> <li>(9)Detach the brazed joints of the compressor suction and discharge pipes.(See Photo 3.)</li> <li>(10)Remove the three compressor nuts and remove the compressor.</li> </ol>	<p><b>Photo 1</b></p>  <p><b>Photo 2</b></p> 
<p><b>2.Removing the fan motor</b></p> <ol style="list-style-type: none"> <li>(1)Remove the top panel(five screws),the service panel(four screws),and the front panel (two screws).(See Photo 1.)</li> <li>(2)Disconnect the connector CN911 on the outdoor controller board.</li> <li>(3)Remove the propeller.</li> <li>(4)Remove the fan motor.</li> </ol>	<p><b>Photo 3</b></p> 

## OPERATING PROCEDURE

### 3.Removing the 4-way valve

- (1)Remove the screws of the top panel , and remove it.(See Photo 1.)
- (2)Remove the service panel,rear panel,and connect cover panel.Release refrigerant gas.
- (3)Remove the electrical parts.(See Photo 2.)
- (4)Detach the brazed joint of 4-way valve and pipe.(See Photo 4.)

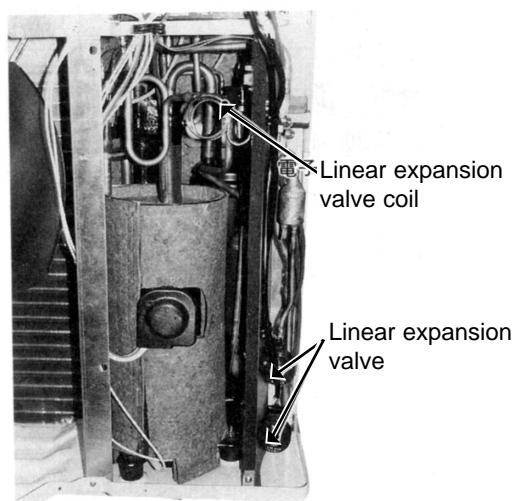
Photo 4



### 4.Removing the linear expansion valve

- (1)Remove the service panel.(See Photo 1.)  
(Gas release is not required if the unit is pumped down.)
- (2)Remove the coil of linear expansion valve.
- (3)Detach the brazed joint of linear expansion valve and pipe.

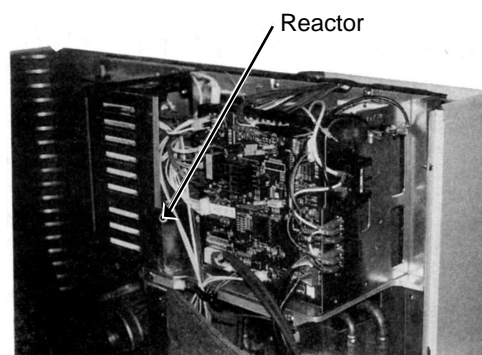
Photo 5



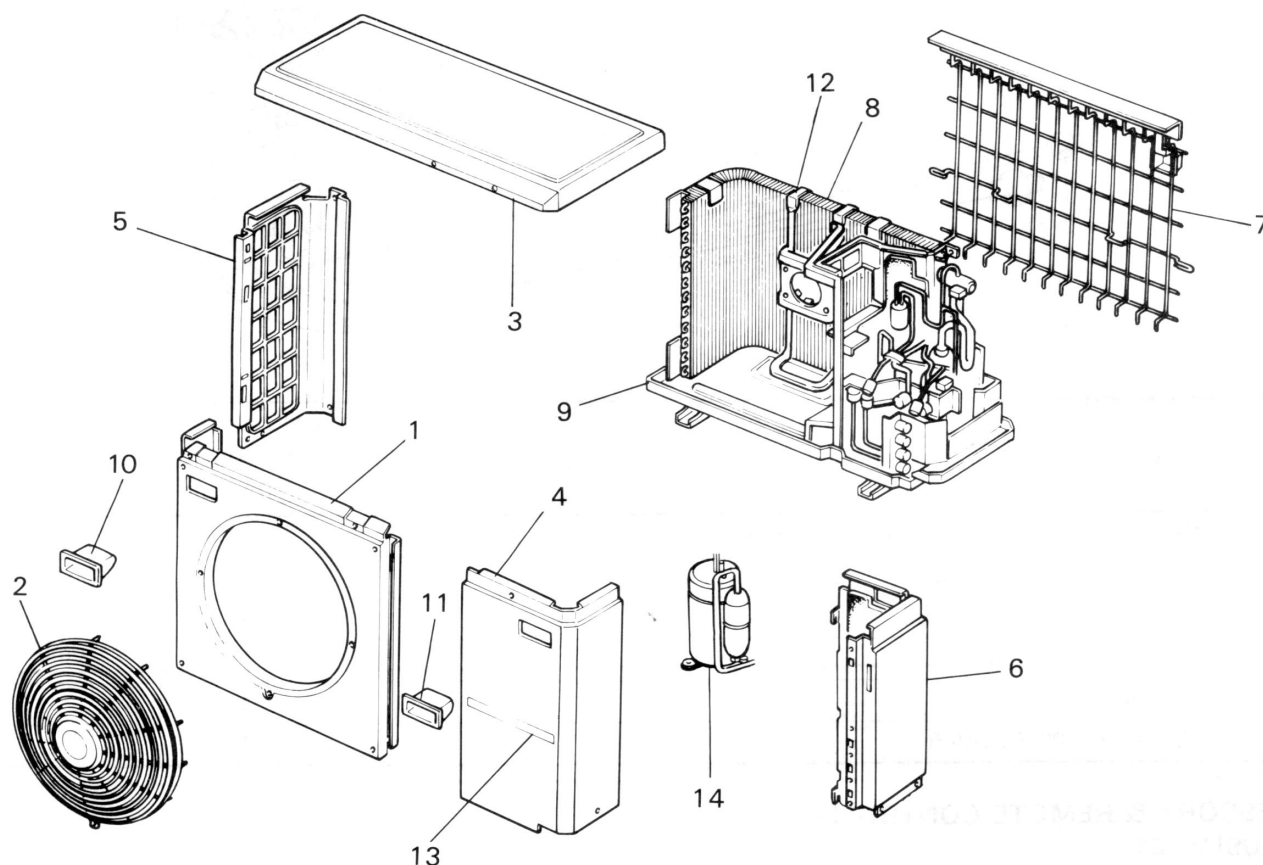
### 5.Removing the reactor

- (1)Remove the five screws of the top panel , and remove it.(See Photo 1.)
- (2)Disconnect the reactor lead wire.
- (3)Remove the two screws of the reactor , and take it out.

Photo 6



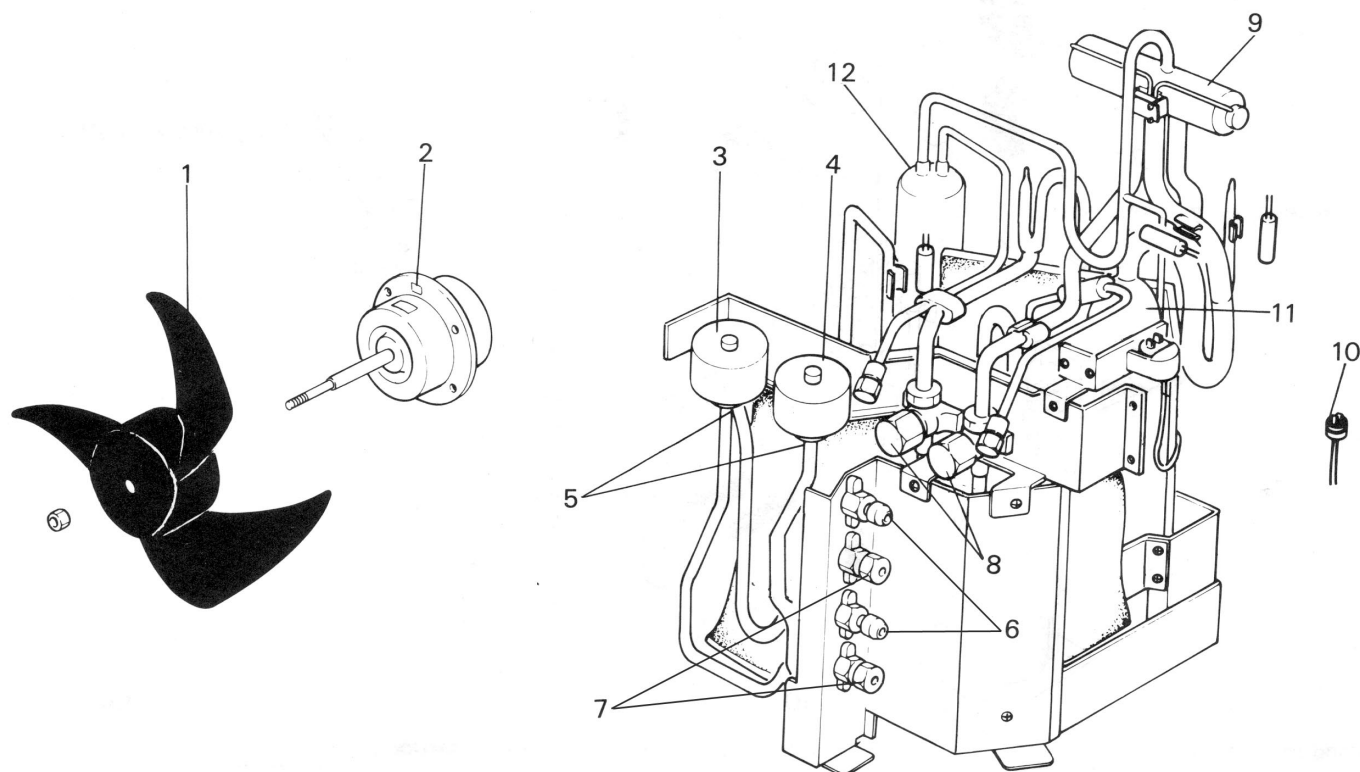


**OUTDOOR UNIT  
STRUCTURAL PARTS**
**MXZ-18NV -[E1] MXZ-18NV -[E2]**


No.	Parts No.	Parts Name	Symbol in Wiring Diagram	Q'ty / unit		Remarks
				MXZ-18NV		
				<u>E1</u>	<u>E2</u>	
1	M21 LL4 232	FRONT PANEL		1	1	
2	M21 LL4 521	FAN GUARD		1	1	
3	M21 LL4 297	TOP PANEL		1	1	
4	M21 LL4 245	SERVICE PANEL		1	1	
5	R01 A00 662	SIDE PANEL		1	1	
6	M21 LL4 248	REAR PANEL		1	1	
7	M21 LL4 523	REAR GUARD		1	1	
8	M21 SJ4 630	OUTDOOR HEAT EXCHANGER		1	1	
9	M21 SJ4 290	BASE ASSEMBLY		1	1	
10	T2W A70 009	HANDLE		2	2	
11	T2W A69 009	HANDLE		1	1	
12	T2W A70 515	MOTOR SUPPORT		1	1	
13	T2W A70 212	LABEL		1	1	
14	T92 669 452	COMPRESSOR	MC	1	1	RHV - 207FEM

# **OUTDOOR UNIT FUNCTIONAL PARTS**

**MXZ-18NV -E1 MXZ-18NV -E2**

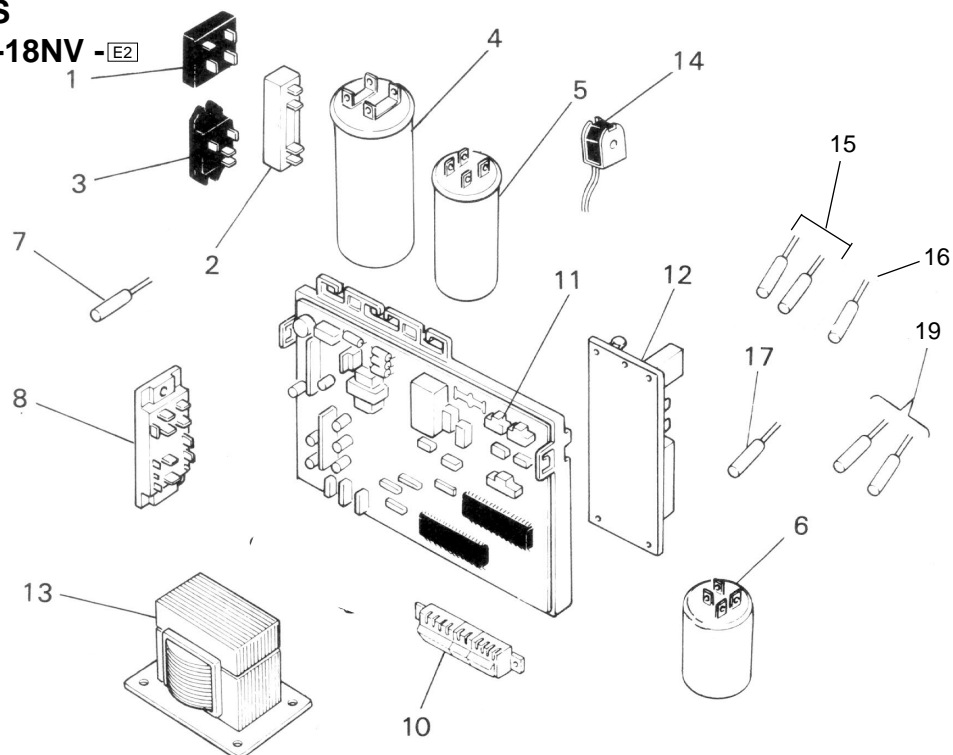


Part number that are circled is not shown in the illustration.

No.	Parts No.	Parts Name	Symbol in Wiring Diagram	Q'ty / unit		Remarks
				MXZ-18NV		
				<div>E1</div>	<div>E2</div>	
1	M21 LL4 501	PROPELLER		1	1	
2	T2W E41 301	OUTDOOR FAN MOTOR	MF	1	1	RA6V50-□□
3	M21 LL4 488	EXPANSION VALVE (COIL)	LEV. A	1	1	
4	M21 LL4 487	EXPANSION VALVE (COIL)	LEV. B	1	1	
5	M21 LL4 646	EXPANSION VALVE		2	2	
6	M21 SJ4 667	UNION (3/8F)		2	2	
7	M21 SJ4 666	UNION (1/4F)		2	2	
8	T2W A64 668	BALL VALVE (3/8)		2	2	
9	T7W 250 403	REVERSING VALVE		1	1	
10	T2W E41 646	HIGH PRESSURE SWITCH	HPS	1	1	
11	M21 LL4 939	ACCUMULATOR		1	1	
12	M21 LL4 938	MUFFLER		1	1	
⑬	M21 986 936	CAPILLARY TUBE (φ4.0Xφ2.4X2000) *		1	1	φ4.0Xφ2.4X300 φ4.0Xφ2.4X400
⑭	M21 L11 936	CAPILLARY TUBE (φ2.0Xφ0.6X1000) *		1	1	φ2.0Xφ0.6X500

\* When servicing, cut the tube to the proper length as shown in the REFRIGERANT SYSTEM DIAGRAM.

# **OUTDOOR UNIT** **ELECTRICAL PARTS** **MXZ-18NV -E1 MXZ-18NV -E2**

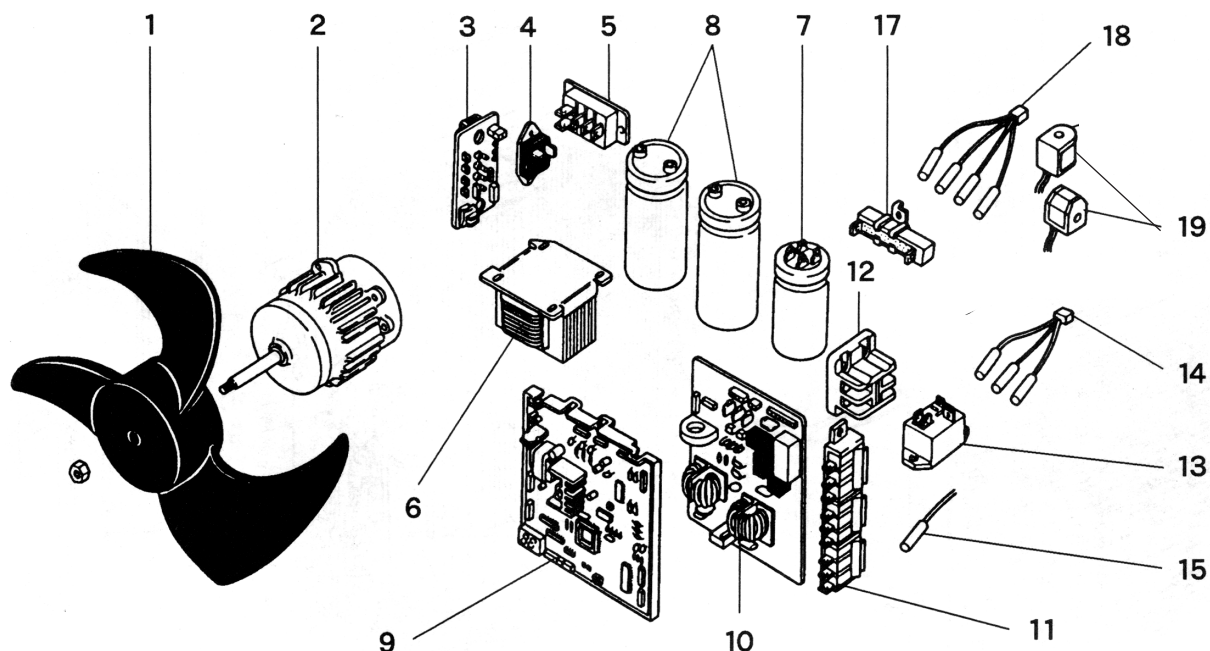


Part number that are circled is not shown in the illustration.

No.	Parts No.	Parts Name	Symbol in Wiring Diagram	Q'ty / unit		Remarks
				MXZ-18NV		
				<div>E1</div>	<div>E2</div>	
1	M21 A19 447	DIODE MODULE	DS63	1	1	
2	M21 U48 362	CURRENT DETECTING RESISTOR	R65	1	1	
3	T2W E22 341	DIODE STACK	DS61	1	1	
4	T2W A70 356	SMOOTHING CAPACITOR	C67	1	1	100μF 400V
5	T2W A70 357	POWER FACTOR CAPACITOR	C61	1	1	1800μF 400V
6	M21 LL4 424	NOISE FILTER	NF61	1	1	
7	T2W E55 309	FIN TEMPERATURE THERMISTOR	RT63	1	1	
8	M21 V47 443	POWER TRANSISTOR MODULE	TR	1	1	
⑨	T2W E41 375	TERMINAL BLOCK	TB	1	1	
10	T2W E41 376	TERMINAL BLOCK	TB	2	2	
11	T2W E41 451	ELECTRONIC CONTROL P.C. BOARD		1		
	T2W E55 451	ELECTRONIC CONTROL P.C. BOARD			1	
12	T2W E41 441	RELAY P.C. BOARD		1	1	
13	T2W A70 337	REACTOR	L	1	1	
14	T2W E41 398	R.V. COIL	21S4	1	1	
15	T2W E41 307	SUCTION TEMPERATURE THERMISTOR	RT66	1	1	SUCTION EVAPORATION
16	T2W E41 308	DEFROST TEMPERATURE THERMISTOR	RT61	1	1	
17	T2W LL4 309	DISCHARGE TEMPERATURE THERMISTOR	RT62	1		
	T2W E55 309	DISCHARGE TEMPERATURE THERMISTOR	RT62		1	
⑮	T2W E22 425	NOISE FILTER	NF62	1	1	
19	T2W E41 306	GAS PIPE TEMPERATURE THERMISTOR	RT64,65	1	1	

## OUTDOOR UNIT STRUCTURAL PARTS

MXZ-32NV - [E1] MXZ-32NV - [E2]

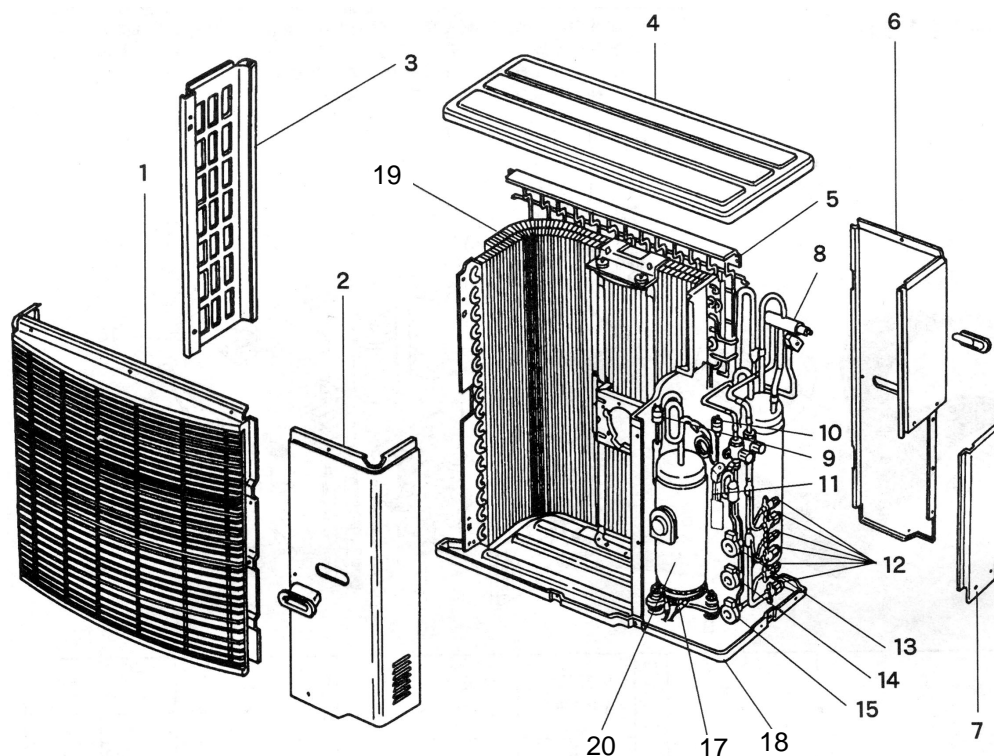


Part of circled number is not shown in the figure.

No.	Parts No.	Parts Name	Symbol in Wiring Diagram	Q'ty / unit		Remarks
				MXZ-32NV		
				E1	E2	
1	M21 17A 501	PROPELLER		1	1	
2	T2W E40 301	OUTDOOR FAN MOTOR	MF61	1	1	
3	T2W E40 452	IPM P.C. BOARD		1	1	
4	M21 17A 447	DIODE STACK	DS62	1	1	
5	M21 17A 443	DIODE MODULE	DS61	1	1	
6	M21 17E 337	REACTOR	L	1	1	
7	T2W E40 357	POWER FACTOR CAPACITOR	C61	1	1	200μF 400V
8	T2W E40 356	SMOOTHING CAPACITOR	C62,C63	2	2	200μF 400V
⑨	T2W E40 451	CONTROL P.C. BOARD		1	1	
10	T2W E40 424	NOISE FILTER BOARD		1	1	
11	M21 37A 376	TERMINAL BLOCK	TB3	4	4	
12	T2W E28 375	TERMINAL BLOCK	TB2	1	1	
13	M21 42A 340	RELAY	X64	1	1	
14	M21 42E 307	GAS PIPE TEMPERATUR THERMISTOR	RT66,67,68,69	1	1	A,B,C,D
15	M21 42A 308	FIN TEMPERATURE THERMISTOR	RT63	1	1	
16	T2W E40 646	H.P. SWITCH	63H2	1	1	3.43MPa(35kg/cm <sup>2</sup> )
17	M21 17A 362	RESISTOR	R	1	1	
18	M21 41V 308	THERMISTOR	RT61,62,64,65	1	1	SUCTION ,EVAPORATION DISCHARGE,DEFROST
19	T2W E40 389	SOLENOID COIL	21S4,21S2	1	1	SOLENOID,R.V./SET
20	T2W E40 441	RELAY P.C. BOARD				

## OUTDOOR UNIT FUNCTIONAL PARTS

MXZ-32NV - E1 MXZ-32NV - E2



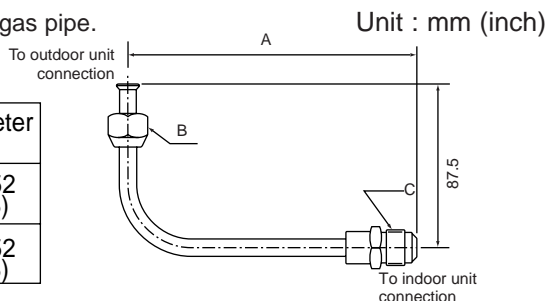
Part of circled number is not shown in the figure.

No.	Parts No.	Parts Name	Symbol in Wiring Diagram	Q'ty / unit		Remarks
				MXZ-32NV		
				E1	E2	
1	M21 17A 232	FRONT PANLE		1	1	
2	M21 17A 245	SERVICE PANEL		1	1	
3	M21 17A 249	SIDE PANEL		1	1	
4	M21 17A 297	TOP PANEL		1	1	
5	T2W E40 523	REAR GUARD		1	1	
6	T2W E40 248	REAR PANEL		1	1	
7	T2W E40 247	C. COVER		1	1	
8	T7W 250 403	REVERSING VALVE		1	1	
9	M21 17A 647	L.P. SWICH	63L	1	1	
10	M21 B20 646	H.P. SWICH	63H1	1	1	
11	M21 17A 640	2 WAY VALVE		1	1	
12	M21 42E 644	UNION		1	1	1/2,3/8,1/4 SET
13	M21 41V 651	EXPANSION VALVE		1	1	A room
14	M21 41V 652	EXPANSION VALVE		1	1	B room
15	M21 42A 653	EXPANSION VALVE		1	1	C room
⑩	M21 42E 651	EXPANSION VALVE		1	1	D room
17	T2W E40 438	CRANKCASE HEATER		1	1	
18	M21 17A 290	BASE ASSEMBLY		1	1	
19	M21 42E 630	HEAT EXCHANGER		1	1	
20	M83 410 300	COMPRESSOR	MC	1	1	CHV-253FAA

### 14.1. Different-diameter pipe

Connects outdoor unit union and gas pipe.

MXZ-18NV	Model name	Connected pipes diameter	Length A	Diameter B	Diameter C
For same diameter pipes	MAC-451JP	$\phi 9.52 - \phi 12.7$ (3/8) (1/2)	155.5	$\phi 12.7$ (1/2)	$\phi 9.52$ (3/8)
	MAC-460JP	$\phi 9.52 - \phi 9.52$ (3/8) (3/8)	155.5	$\phi 9.52$ (3/8)	$\phi 9.52$ (3/8)



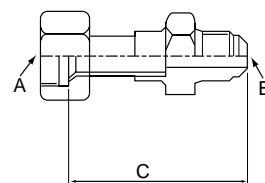
**NOTES:** \*1 As liquid pipe diameter is the same for indoor unit and outdoor unit, L-joint is not required.

\*2 Using MAC-460JP substitutes for pipe bending and makes piping nice-looking.

\*3 Connect it directly to indoor unit gas pipe.

MXZ-32NV	Model name	Model code	Connected pipes diameter (mm)	Length A	Length B	Length C
For different-diameter pipes	MAC-454JP	51H-454	$\phi 9.52 - \phi 12.7$ (3/8) (1/2)	$\phi 9.52$ (3/8)	$\phi 12.7$ (1/2)	69
	MAC-455JP	51H-455	$\phi 12.7 - \phi 9.52$ (1/2) (3/8)	$\phi 12.7$ (1/2)	$\phi 9.52$ (3/8)	65
	MAC-456JP	516456	$\phi 12.7 - \phi 15.88$ (1/2) (5/8)	$\phi 12.7$ (1/2)	$\phi 15.88$ (5/8)	66.5

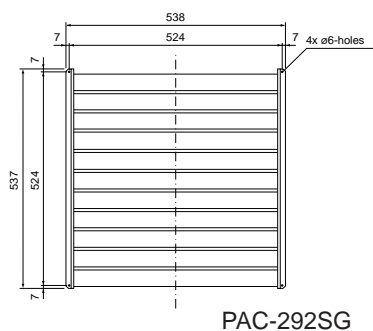
Unit : mm (inch)



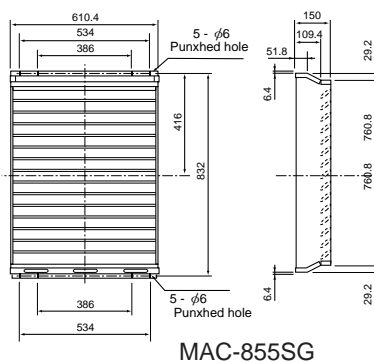
### 14.2. Outlet guide

Changes air discharge direction.

Applied unit	Model name	Model code
MXZ-18NV	PAC-292SG	—
MXZ-32NV	MAC-855SG	51H-855



PAC-292SG



MAC-855SG

### 14.3. Drain socket

Applied unit	Model name	Model code
MXZ-18NV	PAC-SA46DS27	—
MXZ-32NV	PAC-SB83DS	7D2-B83



**MITSUBISHI ELECTRIC CORPORATION**

HEAD OFFICE MITSUBISHI DENKI BLDG. MARUNOUCHI TOKYO100 TELEX J24532 CABLE MELCO TOKYO

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